
Imaging materials — Adhesive mounting systems — Specifications

*Matériaux pour l'image — Systèmes de montage adhésifs —
Spécifications*

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 18932 was prepared by Technical Committee ISO/TC 42, *Photography*.

This second edition cancels and replaces the first edition (ISO 18932:2005), of which it constitutes a minor revision.

The following changes have been made to the first edition:

- updating of normative references; [ISO 18932:2009](https://standards.iteh.ai/catalog/standards/sist/dc8ef9e8-e6c8-4a2a-8709-e7c00dc23a65/iso-18932-2009)
- removal of the former Annex A. <https://standards.iteh.ai/catalog/standards/sist/dc8ef9e8-e6c8-4a2a-8709-e7c00dc23a65/iso-18932-2009>

Introduction

Adhesives can either be permanent (of more interest to consumers mounting photos in albums) or reversible (of more interest to museums and conservators). This International Standard focuses on permanent adhesives, rather than on reversible adhesives. This International Standard assures that adhesives used to mount images are both permanent and photo safe.

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Imaging materials — Adhesive mounting systems — Specifications

1 Scope

This International Standard provides specifications for adhesive mounting materials for use in attaching prints, including photographic, electrophotographic, electrostatic, thermal transfer or inkjet prints to mounting boards, album leaves, file cards and other supports. This International Standard covers both pressure-sensitive and thermally-activated adhesives. Spray adhesives are specifically excluded from this International Standard.

This International Standard is not applicable to situations in which the permanent mounting of a photograph is not recommended.

2 Normative references

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

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

ISO 18902, *Imaging materials — Processed imaging materials — Albums, framing and storage materials*

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

ASTM D3330/D3330M-04, *Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape*

EN 28510-1:1993, *Adhesives — Peel test for a flexible-bonded-to-rigid test specimen assembly — Part 1: 90° peel*

3 Requirements

3.1 Characteristics of adhesive mounting systems

3.1.1 General

Pressure-sensitive adhesive mounting systems commonly consist of two basic forms: supported and unsupported. They are usually applied to the back of the print. Both systems use release-coated liners to protect the adhesive prior to use.

Liquid adhesives require a compatible dispenser or applicator to apply the adhesive to the back of the print or the front of the mounting board. Pastes are more viscous and are usually applied with a brush or roller. Solid adhesives are usually adhered to the back of prints by manual pressure.

Thermally-activated dry mounting adhesives shall have uniform thickness, be flexible, be essentially non-tacky at normal room temperature and consist of two basic forms: supported and unsupported.

3.1.2 Reactivity

The adhesive shall not cause discoloration of the print, paper or mounting board. The adhesive shall meet the requirements of the bleed test in Clause 5 and the requirements of the photographic activity test in Clause 6.

3.1.3 Coating

Pressure-sensitive adhesives shall be applied uniformly to each side of a supporting carrier or a release liner. The adhesive surface shall be tacky to the touch at 23 °C.

Thermally-activated adhesives shall be uniformly coated on both sides of a carrier membrane or be independent as a dry unsupported sheet. The thermally-activated film adhesive shall have uniform thickness and be flexible, dry and essentially non-tacky at 23 °C. Thermally-activated film adhesives do not have release liners.

3.1.4 Physical characteristics

Important physical properties of the supports and adhesive layers of thermally-activated and pressure-sensitive adhesive materials shall include:

- a) no surface structures that could impart texture patterns to the image due to pressure applied in mounting;
- b) uniform thickness and resistance to damage caused by handling;
- c) no voids, particles or other irregularities;
- d) uniformly white or light colours if transparent; uniform colour if translucent or opaque.

3.1.5 Liners

Protective liners shall be easily removed from the adhesive without tearing or delaminating. The release coating on the release liners shall be uniformly coated without voids or streaks and shall be sufficiently bonded to the liner to prevent any transfer to the adhesive.

3.2 Types of construction

3.2.1 Supported pressure-sensitive adhesives

This adhesive system consists of a layer of pressure-sensitive adhesive coated on both sides of a carrier. The carrier may be any relatively thin, flexible material such as paper, film, polyester web, non-woven synthetic, etc. The carrier shall be uniform in thickness and appearance. The carrier shall comply with all requirements for paper or plastic materials in ISO 18902 and shall pass Photographic Activity Testing (PAT) in accordance with ISO 18916.

This product is supplied in three basic forms:

- in roll form with one release liner;
- in roll or sheet form sandwiched between two release liners;
- coated on one side of a mounting board with one release liner.

Pressure-sensitive adhesives shall be free from imperfections and conform to ISO 18916 and ISO 18902.

3.2.2 Unsupported pressure-sensitive adhesives

This adhesive material has a single uniform layer of adhesive that is not reinforced or supported by a carrier.

The product is supplied in three basic forms:

- in roll form with one release liner;
- in roll or sheet form sandwiched between two release liners;
- coated on one side of a mounting board with one release liner.

3.2.3 Supported thermally-activated adhesives

This adhesive system consists of a layer of a thermally-activated adhesive film coated on both sides of a carrier. The carrier may be any relatively thin, flexible material such as paper, film, polyester web, non-woven synthetic, etc. The carrier shall be uniform in thickness and appearance. The carrier shall comply with all requirements for paper or plastic materials in ISO 18902 and should pass PAT in accordance with ISO 18916.

The product is supplied in four basic forms:

- in roll form;
- in sheet form;
- coated on one side of a mounting board;
- coated on one side of canvas or other soft substrate with or without one release liner.

3.2.4 Unsupported thermally-activated adhesives

This adhesive system consists of a single uniform layer of adhesive that has not been reinforced or supported by a carrier.

The product is supplied in four basic forms:

- in roll form;
- in sheet form;
- coated on one side of a mounting board;
- coated on one side of canvas or other soft substrate with or without one release liner.

3.3 Types of thermally-activated materials

3.3.1 Type I — Non-removable

The adhesive of this mounting material shall provide bonding between print and mounts, preventing deliberate separation to the print or mounting board surface by reheating for the time as specified by the manufacturer and temperature specified in 3.4.1 and 3.4.2. This type of adhesive will permanently bond after having reached recommended time/adhesion temperature within the mounting system.

3.3.2 Type II — Removable

The adhesive of this mounting material shall allow separation of the print from the mounting board without injury to either surface by reheating to the temperatures specified in 3.4.1 and 3.4.2, but otherwise shall maintain satisfactory bonding. Thermally-detachable adhesives shall be cooled under pressure for no less than 15 s to activate the bond.

3.4 Classes of thermally-activated materials

3.4.1 Class 1 — Low temperature

The thermally-activated coating shall provide adhesion at temperatures of 66 °C to 108 °C.

3.4.2 Class 2 — High temperature

The thermally-activated coating shall be adhesive at temperatures of 108 °C to 163 °C under the conditions of time and temperature specified by the manufacturer. This class of adhesives is not recommended for resin-coated (RC) or digital imaging materials because the required temperatures are likely to damage the emulsion surface and/or the colorants.

3.5 Other adhesives

3.5.1 Liquid

Liquid adhesives are transparent, translucent, opaque or colour-changing.

3.5.2 Pastes

Pastes are more viscous than liquid adhesives and are typically translucent or opaque.

3.5.3 Solid

Solid adhesives include glue sticks and are typically translucent, opaque or colour-changing.

3.6 Adhesive strength

3.6.1 Pressure-sensitive adhesive strength

The adhesive should form an immediate bond to the print as well as the mounting board when pressed together with enough uniform pressure to provide intimate contact. This is typically best accomplished using roll-laminating equipment so as to prevent any air entrapment during the bonding process. Adhesion should be such that forcible separation results in tearing, delaminating or distortion of the print or mounting board. If none of these occur, minimum bond strength of 1,3 N/cm (132 g-force/cm) shall be obtained when tested in accordance with 4.1 to 4.6.

3.6.2 Thermally-activated adhesive strength

When available, the manufacturer's recommended procedures shall be used for mounting the print. Adhesion shall be completed within 120 s after reaching bond temperature in all cases. Applied pressure shall be uniform and high enough to evenly bond. Adhesive strength and longevity is directly related to the correct amount of bonding time, proper temperature, adequate pressure and reduced moisture content.

Adhesion should be such that forcible separation results in tearing, delaminating or distortion of the print/ mounting board. If none of these occur, minimum bond strength of 1,3 N/cm (132 g-force/cm) shall be obtained when tested in accordance with 4.1 to 4.6.

The adhesive strength of Type I adhesives shall be sufficient to prevent peeling of the print from the mount during the cooling period. Type II adhesives bond during cooling; therefore, the adhesive strength shall be sufficient to prevent peeling of the print from the mount after cooling for 30 s or to 10 °C below the bonding temperature.

3.7 Blocking

Blocking is a term used to describe the adhesion of surfaces of materials that are in intimate contact, as in a package, pile or roll. If the thermally-activated adhesive of a mounting material tends to block under normal storage or use conditions, it shall be protected with an appropriate interleaving material, such as waxed or silicone-treated paper. However, slight-to-moderate blocking is acceptable at room temperature, even with interleaved material, if the surfaces can be separated readily without damage to the adhesive.

3.8 Shelf-life and storage conditions

Pressure-sensitive and thermally-activated mounting systems should be stored in their original container, suspended from the roll core, or by standing the roll on end. Optimum storage conditions are cool and dry, such as 23 °C and 50 % relative humidity or lower. Temperatures for extended periods at or above 38 °C can lead to adhesive ooze at the roll edges and/or significant loss of adhesion properties.

4 Adhesion tests

4.1 General

In order to measure the bonding strength of an adhesive to an imaging material and mounting board, there are two mandatory peel-adhesion tests and two additional tests required for some applications, as outlined below.

- Unaged adhesive test: this test applies to all adhesive types and is intended for adhesives which are to be used immediately and are tested shortly after application.
- Heat-aged adhesive test: this test applies to all adhesive types and is intended to determine the adhesive strength after the adhesive has aged.
- Initial adhesive stress test: this test shall be required if the intended use can result in an initial stress on the adhesive bond.
- Adhesive shelf-life test: this test shall be required if the adhesive will not be applied immediately after preparation.

These tests shall be performed in accordance with EN 28510-1:1993, with the modification that the “flexible adherent” specified in EN 28510-1:1993, 5.1.2, shall be the imaging material.

4.2 Unaged adhesive test

4.2.1 Double-sided pressure-sensitive tapes

With respect to EN 28510-1:1993, 5.2, the following shall be substituted for testing double-sided pressure-sensitive tapes.

A 300 mm specimen of the tape to be tested shall be removed. 12 mm at one end of the adhesive shall be folded to form a tab. The other end of the specimen shall be touched to one end of the mounting board. The other end of the tape shall be held so that it does not make contact with the mounting board, but is positioned above it. The assembly shall be rolled mechanically or by hand twice in each lengthwise direction, causing it to apply the tape to the mounting board. This prevents entrapment of air between the adhesive and the mounting board. If entrapment of air occurs, the entire specimen shall be discarded.

The liner shall be removed and the imaging material shall be superimposed. The imaging material shall be applied in the manner of applying the double-sided tape to the mounting board so that the roller makes the actual application of the imaging material to the double-sided tape.