
**Imaging materials — Photographic film
and papers — Method for determining
the resistance of photographic
emulsions to wet abrasion**

*Matériaux pour image — Films et papiers photographiques —
Méthode de détermination de la résistance des émulsions
photographiques à l'abrasion dans des conditions humides*

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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.

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 18914 was prepared by Technical Committee ISO/TC 42, *Photography*.

This second edition cancels and replaces the first edition (ISO 18914:2002), of which it constitutes a minor revision with the following changes:

- the contact information contained in footnote 1 has been updated;
- the original footnotes 2 and 4 have been removed and the remaining footnotes have been reidentified;
- Annex A has been removed.

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Introduction

If the gelatin emulsion of photographic materials is rubbed against any stationary part of a processing machine, it may be damaged by abrasion during processing. Abrasion can also occur when film or paper is processed in a tray by hand, as the gelatin layers are soft enough to be gouged by foreign particles, corners, or fingernails.

Photographic emulsions are usually more susceptible to abrasions when wet than when dry. Wet emulsions and gelatin backing are also more susceptible to abrasion than the support materials. The test method in this International Standard is applicable only to such wet emulsions or gelatin layers. For dry scratch resistance, see [1] in the Bibliography.

Photographic emulsions and gelatin layers show physical changes with time. The resistance of these layers to wet abrasion depends on the inherent properties built in at manufacture. It also varies with the treatment received in the dry state prior to processing, such as temperature and moisture content during storage.

The susceptibility to abrasion during processing depends not only on the inherent characteristics of the emulsion, but also on the types of processing solutions, temperatures, and immersion times (see [2] in the Bibliography for descriptions). In determining emulsion resistance to abrasion, these factors are to be carefully controlled.

The results of wet abrasion, or mushiness, tests are most significant if consideration is given to the final usage of the particular material. For instance, some films are viewed while wet, although usually films and photographic prints are dried prior to viewing or other use. Some materials may show less abrasion damage when examined after drying than when examined wet. The most appropriate rating method is to be chosen and clearly stated in the results.

The test method in this International Standard provides an excellent means of comparing emulsions of different ages, types, processing solutions, processing immersion times, and temperatures, as well as the effects of post-processing treatments. However, many factors are involved in the equipment and technique in either continuous, tank, or tray processing which cannot be considered in a test procedure. Analysis of abrasion resistance in a particular processing system can only be made in the processing system under consideration.

This test method has also been used to measure the change in the physical integrity of the gelatin-emulsion layer after normal or accelerated ageing. For this purpose, the wet abrasion (mushiness) is measured when the emulsion is immersed in distilled water.