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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 6849-2025

Replacing GB/T 6849-1995

**Imaging materials - Photographic films and papers - Wedge test
for brittleness**

影像材料 照相胶片和相纸 脆性楔式试验方法

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 6849-1995 "Photographic film and paper - Wedge test method for brittleness" and is consistent with GB/T 6849-1995.

In addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) Added "Terms and Definitions" (see Chapter 3);

- b) The description of the structure of the brittle wedge tester has been changed (see 5.1, 4.1 of the 1995 edition);
- c) Changed the test method for test films at 0°C or below, after equilibration in the sealed film box (see 7.2, 1995 edition).
- d) Deleted "a small closed chamber in which a constant relative humidity is maintained by using an aqueous solution for conditioning and testing" (see Appendix A of the 1995 edition).

This document is equivalent to ISO 18907:2013 "Imaging materials - Photographic films and papers - Wedge test method for brittleness".

Introduction

Brittleness is an undesirable characteristic of photographic films and papers.

To achieve satisfactory results, the film or paper needs to be flexible enough (or less brittle) to ensure that it can withstand bending stresses under conditions that may be encountered in practice.

Well tolerated.

Photographic film and paper are made by laminating two or more different materials, usually a film or paper base, and these layers need to be flexible enough to withstand bending. However, under conditions of low relative humidity and low temperature, the gelatin layer and/or support tends to become brittle.

When a structure is subjected to stresses that exceed its bending and flexure capacity, cracks and/or fractures may form.

Different types of brittle failures can occur when film and paper are stressed in different ways. For example, failure can occur in the emulsion layer.

Very fine cracks (without breakage of the support) which are objectionable when viewing the photograph.

For films, failure (cracking or breaking) may include cracks in the support or complete breakage of all emulsion layers.

Brittleness is not an absolute physical property. The brittleness exhibited by a photographic material depends largely on the way it is mechanically handled and on the external temperature and relative humidity. Photographic materials will exhibit different properties under different actual use conditions. Therefore, no single brittleness test can guarantee grading of various types of photographic materials.

The brittle wedge test method described in this document is a simple fold-bending test of photographic materials, subjecting them to high strain rates.

It has been a recognized method for assessing brittleness for many years and is relevant to product performance in many practical applications.

Other methods of bending testing used are to fold the specimen repeatedly until it breaks, or to bend it on shafts of different diameters.

There are many flexible testing methods available, but they are not standardized yet.

Brittleness is affected by temperature and relative humidity. In most practical applications, brittleness at low relative humidity is greater than brittleness at low temperature.

Furthermore, at relative humidity levels below about 25%, small changes in humidity can cause significant changes in brittleness.

Therefore, brittleness testing is only performed in an environment where the temperature and relative humidity are very precisely controlled.

Brittleness is also very dependent on sample thickness, increasing with increasing support or emulsion layer thickness.

When measuring the brittleness, the thickness of the sample must be considered. The temperature and humidity conditions experienced by the material between the time of manufacture and the time of testing will also affect the brittleness.

Equilibration of the samples to standard temperature and humidity did not eliminate this effect.

Gelatin is usually more brittle than the support, so photographic products coated with gelatin on only one side will not sag when bent outward (i.e., the gelatin is under tension).

Usually more crispy.

The brittleness may vary with the bending axis, depending on the orientation of the support. The brittleness of the emulsion layer is generally unaffected by orientation.

Imaging materials. photographic film and paper Brittle wedge test method

1 Scope

This document describes methods for testing and quantifying the brittleness of photographic films and papers. However, it does not explicitly address all brittleness encountered.

For these stresses, special tests may be required to correctly assess the brittleness of the material.

This method is suitable for films with or without gelatin backing and for ordinary photographic paper or plastic-coated (RC) paper. It is also suitable for unprocessed or processed photographic material, although the level of brittleness after processing may be

significantly different from that before processing.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

brittleness

The property of a material that causes it to break or crack when bent.

4 Principles

Measures the size of the wedge tester opening when the specimen ring breaks under high tension.

5.1 Brittle Wedge Tester

The brittle wedge tester consists of two non-parallel metal plates or jaws that form a wedge or V shape as shown in Figures 1 and 2.

The narrow end of the wedge is equipped with a clamp to fix one end of the specimen. The tester has a ruler that can measure the difference between two points at any point.

The distance between the jaws (see reference [2]).

There are two types of wedge testers. narrow and wide. The wedge tester (narrow) (see Figure 1) has a wedge angle of 9° and a maximum opening of 25mm, narrow type is usually suitable for most films. Wedge tester (wide type) (see Figure 2) has a wedge angle of 28° and a maximum wedge opening of 74mm, a wide tester is recommended for more fragile films and photographic papers.