International Standard 5769

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Photography — Processed films — Method for determining lubrication

Photographie — Films développés — Méthode de détermination de la présence d'un lubrifiant

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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Photography — Processed films — Method for determining lubrication

0 Introduction

The advantages of post-process lubrication of photographic film have been known for several decades and there have been numerous technical publications on this subject. Lubrication has a beneficial effect in reducing film susceptibility to abrasion[1]. This is of importance in microfilm applications[2] or whenever moving film is forced against stationary surfaces. Lubrication of motion-picture release prints, for example, prevents sticking and premature perforation breakdown during projection or viewing[3][4]. More recently, the advent of sprocketless projectors with higher gate tensions has intensified the need for lubrication.

Since lubrication is an additional step for processing laboratories, processed films are frequently left unlubricated, either intentionally or inadvertently. As a result, when in use films may be irreparably damaged. Abrasion damage of microfilm and projection or viewing failure of motion-picture films has been linked directly to the absence of any lubricant. Until recently the detection of lubricant on films has been very difficult. This International Standard specifies a non-destructive method of test for determining, by measurement of a frictional property, whether or not any lubricant exists on films. The test can be applied to even very small areas of film, such as the margin between the edge of a super 8 film and its perforations. The emulsion and reverse sides of the film can be tested separately.

The test method is proposed as a means of monitoring the application of lubricant to film by measuring one of many possible friction coefficients. It does not completely characterize the friction properties of a material. Against stationary equipment, for example, a film may not have the same friction coefficient as measured in the friction test described in this International Standard. Likewise, it will not evaluate the effectiveness of a lubricant for any given application. It is strongly recommended that its use be limited to the detection of lubricant, for which purpose it is well suited.

1 Scope and field of application

This International Standard specifies a method of determining the presence of lubricant on photographic film. It is intended that the test should be applied to film after processing, but the test may be used in other situations. It is applicable to both the emulsion and reverse sides.

The results of the test are calculated in terms of a coefficient of friction but the test does not purport to characterize the frictional characteristics of the film material.

2 Principle

The test is based on the classical inclined-plane friction test. It gives the angle of inclination of the film surface at which a rider, bearing on the film surface through the round end of a common paper clip under a relatively high contact pressure[5], will slide downwards along the film. The tangent of this angle represents a coefficient of friction between the film and the paper clip. Values of this coefficient of friction are given indicating when lubricant is adequate or inadequate.

3 Apparatus

3.1 Friction Slider, consisting of an inverted U-shaped structure with the larger round end of a common steel paper clip (see the annex) projecting downward from the inside centre (see figure 1). The centre of gravity shall be at least 25 mm below the lower end of the paper clip. The mass should be between 50 and 100 g to have sufficient mass yet avoid film damage.

To construct the friction slider, cut off the smaller round end of the paper clip and insert the resulting cut ends of the clip into holes drilled in the U-shaped structure. The diameter of the drilled holes should allow a push-fit to be obtained.

The choice of materials for the friction slider is not critical provided that it permits compliance with the constraints stated above. Acrylic plastic has been found to be suitable.

The slider shall be marked to differentiate between the two faces[1].

1) After much use, a paper clip will become flat from wear. This will have a tendency to produce lower readings, particularly at high friction levels. The side of the slider which is marked should always be oriented in one direction during use. An occasional comparison of values obtained by reversing the direction of the slider face will provide a reference to determine when the paper clip is worn. It should then be replaced.