INTERNATIONAL STANDARD

# ISO 4674-2

Second edition
2021-10

Corrected version
2021-11

# Rubber- or plastics-coated fabrics — Determination of tear resistance —

## Part 2: Ballistic pendulum method

*Supports textiles revêtus de caoutchouc ou de plastique — Détermination de la résistance au déchirement —*

*Partie 2: Méthode au pendule balistique*



Reference number
ISO 4674-2:2021(E)

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Published in Switzerland

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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 (see 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 (see 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.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 4, *Products (other than hoses)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 248, *Textiles and textile products*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 4674-2:1998), which has been technically revised. The main changes compared with the previous edition are as follows:

— in Clause 5, the title has been changed to "Apparatus and reagents" and 5.3, 5.4, and 5.5 have been added;

— in Clause 6, the title has been changed to "Sampling and preparation of test pieces" and Clause 5 has been integrated;

— in Clause 7, the test duration has been specified;

— in Clause 8, the title has been changed to "Atmosphere for conditioning and testing" and 8.2 has been added;

— in Clause 9, the wet test has been specified.

This corrected version of ISO 4674-2:2021 incorporates the following corrections:

— "Dimensions in millimetres" has been added to Figure 1.

A list of all parts in the ISO 4674 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

# Introduction

Tearing is amongst the more usual ways of destruction for many thin materials such as paper, coated or uncoated textiles, plastics films and leather. Knowledge of the resistance of these materials to this type of behaviour is therefore very important.

In practice, tearing can result from very different circumstances; hence the large number of test methods that have been developed in order to predict the behaviour of materials in various situations.

The ISO 4674 series deals with initiated tearing, i.e. the propagation of a tear from an initiating cut. It consists of the following two parts:

— *Part 1: Constant rate of tear methods*

— *Part 2: Ballistic pendulum method*

ISO 4674-1 describes two methods using a tensile-testing machine at constant rate of elongation.

This document describes a dynamic method using the kinetic energy of a falling pendulum.

Other methods, e.g. the “wounded burst test”, are under consideration as possible further parts.

# Rubber- or plastics-coated fabrics — Determination of tear resistance —

## Part 2:
## Ballistic pendulum method

**WARNING — Persons using this document should be familiar with laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.**



## 1 Scope

This document specifies a method for the determination of tear resistance based on the action of an active force applied to a notched test piece.

The test can be carried out on:

— test pieces that have been conditioned in a standard atmosphere; or

— test pieces that have undergone pre-treatment, e.g. water immersion.

The results obtained by this method cannot be compared with those obtained by methods involving constant rate of tear.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 2231:1989, *Rubber- or plastics-coated fabrics — Standard atmospheres for conditioning and testing*

ISO 2286-2, *Rubber- or plastics-coated fabrics — Determination of roll characteristics — Part 2: Methods for determination of total mass per unit area, mass per unit area of coating and mass per unit area of substrate*

## 3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

## 4 Principle

A sudden force is applied to a notched test piece. This force is generated by a pendulum. The amplitude of the first oscillation enables the tearing force to be measured.