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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

*Supports textiles revêtus de caoutchouc ou de plastique — Détermination des caractéristiques des rouleaux —
Partie 2: Méthodes de détermination de la masse surfacique totale, de la masse surfacique du revêtement et de la masse surfacique du support*

ICS: 59.080.40

ISO STANDARD PREVIEW
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ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

ISO 2286-2 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products title*, Subcommittee SC 4, *Products (other than hoses)*.

This second edition cancels and replaces the first edition ISO 2286-2:1998, which has been technically revised.

ISO 2286 consists of the following parts, under the general title *Rubber – or plastics – coated fabrics — Determination of roll characteristics*:

- *Part 1: Methods for determination of length, width and net mass*
- *Part 2: Methods for determination of total mass per unit area, per unit area of coating and mass per unit area of substrate*
- *Part 3: Methods for determination of thickness*

Introduction

The total mass per unit area of a material, the mass per unit area of the substrate cloth and the mass per unit area of the coating are quantities which define the basic quality of a coated fabric and determine many of its physical properties. The substrate cloth mass determined by these methods does not necessarily represent the mass of the substrate cloth in the uncoated state. For example, in the case of coated fabrics in which a bonding agent has been used, the substrate cloth mass determined may be substantially higher than the uncoated mass because the prescribed treatment has not removed the entire coating. This will be particularly so in cases where the substrate cloth is made from multifilament or spun-fibre yarns. Dimensional changes in the substrate cloth during processing may also occur.

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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

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This standard 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 part of ISO 2286 specifies methods of determining the total mass per unit area, the mass per unit area of the coating and the mass per unit area of the substrate cloth of a rubber- or plastics-coated fabric. Methods for removing coatings of specific compositions are described in [Annex A](#).

2 Normative references

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

ISO 2231, *Rubber- or plastics-coated fabrics — Standard atmospheres for conditioning and testing*

3 Determination of total mass per unit area

3.1 Apparatus

3.1.1 Balance, capable of reading to 1 mg or less.

3.1.2 Means of maintaining an atmosphere with a relative humidity not greater than 10 % and a temperature of $65\text{ °C} \pm 5\text{ °C}$.

NOTE Air at 20 °C and 65 % relative humidity, when heated at constant pressure to $65\text{ °C} \pm 5\text{ °C}$, will have a relative humidity of approximately 5 %. Higher temperatures can lead to changes in some coatings.

3.1.3 Cutter, capable of cutting, from the sample of coated fabric, a test piece of area $100\text{ cm}^2 \pm 1\text{ cm}^2$.

NOTE It has been found convenient to use a circular cutter for this purpose, but square or rectangular test pieces may be used provided they are within the accuracy specified above.

3.2 Preparation of test pieces

Using the cutter ([3.1.3](#)) cut five test pieces from the sample, from positions spaced reasonably evenly and close to the diagonal across the width of the sample so that the full width of the coated fabric is represented.

Do not take any test pieces within 1 m of a production-manufactured roll end.

3.3 Procedure

Unless otherwise agreed between the interested parties to skip the drying process, dry the test pieces to constant mass in an atmosphere with a relative humidity not higher than 10 % at a temperature of $65\text{ °C} \pm 5\text{ °C}$.

Condition the test pieces in accordance with the method of conditioning “1” in ISO 2231 and, without removing them from the conditioning atmosphere, determine the mass of each to the nearest 5 mg and the surface area of each to within 1 %.

NOTE Any estimate of the mass per unit area of the coated fabric derived from the total net mass of the roll and its known length and width may be inaccurate because a complete roll of coated fabric cannot normally be conditioned to equilibrium in a standard atmosphere. Such inaccuracies are due to excesses or deficiencies in moisture regain through the complete roll.

3.4 Calculation and expression of results

For each of the five test pieces, calculate the total mass per unit area, in grams per square metre, using the formula

$$\frac{m \times 10^4}{A}$$

where

m is the mass of the test piece, in grams;

A is the area of the test piece, in square centimetres.

Calculate the mean of the five determinations, expressing the final result to the nearest 1 g/m^2 .

Take this mean as the total mass per unit area of the material under test.

3.5 Test report

The test report shall include the following information:

- a reference to this part of ISO 2286;
- the condition at the time of conditioning and the test;
- a complete description of the coated fabric;
- the mean value, in grams per square metre, of the total mass per unit area obtained from the five test pieces;
- details of any deviations from the procedure specified;
- the date of the determination.

4 Determination of mass per unit area of substrate

CAUTION — Some of the solvents used may be toxic, flammable or otherwise hazardous. Care in the handling of such materials must be exercised. The inhalation of vapours should be avoided. Suitable protective clothing, including gloves and goggles, should be worn when appropriate. It is recommended that a suitable eyewash be kept in a position convenient for use. Any further precautionary measures recommended by the solvent manufacturer should be followed.

4.1 General

The procedure specified for removing the coating from the substrate cloth is governed both by the nature of the coating and by the nature of the substrate, and indeed for some types of coating there will be no known method of removal. Where this is the case, it shall be reported in the test report

4.2 Principle

The coating is removed with a stripping agent from the same test pieces as were used for the determination of the total mass per unit area. The stripped test pieces are dried, conditioned and weighed. The procedure is repeated until constant mass is reached.

4.3 Reagent

4.3.1 Suitable solvent system (stripping agent), which has no solvent or chemical action on the substrate. Particular care shall be taken if there are bonding agents or finishing treatments on the substrate which are not essentially part of the coating but which might be removed with it (e.g. bonding agents in nonwoven (bonded-fibre) fabrics, rot-proofing agents, etc.). If it is known or suspected that such an agent has unavoidably been removed with the coating, this shall be reported in the test report.

NOTE A suitable solvent system may be an organic solvent, a mixture of organic solvents, water or an aqueous solution (see [Annex A](#)).

4.4 Apparatus

The same apparatus as described in [3.1](#) is required.

4.5 Procedure

4.5.1 Dissolve the coating from each test piece separately. In many cases, the bulk of the coating may be successfully removed mechanically after moistening the substrate with the stripping agent. Use either Soxhlet extraction where appropriate or immerse the test pieces with occasional agitation in at least three successive portions of the solvent at an appropriate temperature until the coating has apparently been completely removed. Ensure at this and subsequent stages that any loose threads are retained with the test pieces. If the stripping agent used is itself a solution containing non-volatile components, wash the test pieces several times in a suitable pure solvent.

4.5.2 Dry the test pieces for at least 1 h at $65\text{ °C} \pm 5\text{ °C}$, allow to stabilize by cooling in a desiccator for 15 min, and determine the mass of each to the nearest 5 mg. Extract the stripped test pieces with a further quantity of stripping agent, wash if necessary, then dry, stabilize and determine their mass as before. If the second determination differs from the first by more than 1 %, repeat the treatment until successive determinations show a difference of less than 1 %.

4.5.3 Condition the test pieces in accordance with the method of conditioning "1" in ISO 2231 and determine their masses to the nearest 5 mg to obtain the substrate cloth mass per unit area.

4.6 Calculation and expression of results

For each of the five test pieces, calculate the mass per unit area of the substrate, in grams per square metre.

Calculate the mean of the five determinations, expressing the final result to the nearest 1 g/m².

Take this mean as the total mass per unit area of the material under test.