
**Natural rubber in bales — Amount of
bale coating — Determination**

Caoutchouc naturel en balles — Quantité d'enduit — Détermination

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This third edition cancels and replaces the second edition (ISO 1434:1995), which has been technically revised with the following changes:

- the scope has been reworded and the ashing method has been made the preferred method;
- the brushing or scraping method has been modified to align dimensions of specimen for ashing methods;
- the sampling procedure has been modified;
- the notes in the ashing method, stating the need for the correction of ash arising from the rubber itself, have been deleted.

Natural rubber in bales — Amount of bale coating — Determination

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International 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 International Standard specifies two methods for the determination of the amount of bale coating present on the outside wrapper sheets of bales of natural rubber:

- ashing method;
- brushing or scraping method.

The ashing method is the preferred method.

NOTE 1 The brushing or scraping procedure, while much faster, is not suitable for use on such rubbers which have holes on the surface where coatings could penetrate, making its removal difficult.

NOTE 2 The ashing procedure is not suitable for coating materials which are affected by the ashing. In particular, coatings containing carbonates or organic matter can give very low results.

2 Sampling

2.1 General

The greater the number of bales in the sample, the more representative is the sample of the lot.

But in most cases, practical considerations impose a limit on what is possible.

The number of bales to be chosen at random shall be agreed between the customer and the supplier.

NOTE If applicable, a statistical sampling plan chosen from ISO 3951-2 can be used.

2.2 Preparation of the test portion

Pneumatically punch out three test pieces of 50 mm × 50 mm, selected at random from the outside wrapper sheets, from any three contiguous sides of the bale, one piece from each side.

If the ashing procedure is used, the thickness of the piece shall not exceed 4 mm.

Handle and store the sample so as to minimize the loss of bale coating.

Test pieces shall be punched out from the bales using a sample cutting die ([3.2.1](#)).

3 Ashing method

3.1 Principle

A weighed test portion is wrapped in ashless filter paper, preignited at $300\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$ for 1 h, followed by incineration in a muffle furnace at about $550\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$ for 2 h to 4 h until all the carbonaceous matter has been burnt off and constant mass is attained.

NOTE This method is taken from ISO 247.

3.2 Apparatus

Normal laboratory equipment and the following.

3.2.1 Sample cutting die (see [Annex A](#)), mounted on suitable device.

3.2.2 Crucible, of silica or porcelain, with lid of capacity approximately 80 ml.

3.2.3 Weighing balance, to weigh accurately up to 1 mg.

3.2.4 Bunsen burner, or similar type of gas burner.

3.2.5 Desiccator, with efficient desiccant.

3.2.6 Ashless filter paper, diameter about 150 mm.

3.2.7 Muffle furnace, fitted with provision for controlling the air flow through the furnace and with temperature controlling device to maintain a temperature of $550\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$.

3.3 Procedure

Punch out three test specimens from each of the three pieces removed from the bale, as per [2.2](#), taking care not to lose bale coating. Weigh each test specimen to the nearest 0,1 mg and wrap each test portion in an ashless filter paper ([3.2.6](#)). Take care that the rubber does not ignite. If any material is lost due to spurting or frothing, repeat the above procedure with a new test portion.

When the rubber has decomposed and a dry carbonaceous mass remains, transfer the crucible and its contents to the muffle furnace ([3.2.7](#)), maintained at $550\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$. Continue heating until a clean ash is obtained. Remove the crucible from the furnace; allow to cool to ambient temperature in the desiccator ([3.2.5](#)) and weigh to the nearest 0,1 mg.

Then heat the crucible and its content for a further 30 min in the muffle furnace maintained at $550\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$. Allow cooling to ambient temperature in the desiccators and re-weigh to the nearest 0,1 mg.

Repeat the heating, cooling and weighing procedure until the difference between two successive weighings is less than 1 mg. Calculate the mass of the ash by difference.

4 Brushing or scraping method

Punch out three test specimens from each of the three pieces removed from the bale, as per [3.2](#), taking care not to lose bale coating. Weigh the test specimen to the nearest 0,1 mg. Remove the bale coating using a stiff wire brush or by scraping, taking care not to abrade rubber from the wrapper sheet. Weigh the specimens after the removal of bale coating, to the nearest 0,1 mg.

Calculate the mass of the bale coating by difference.

5 Expression of the results

Calculate the amount of bale coating per bale, expressed in grams per kilogram of rubber, using the following formula:

$$W = \frac{A_1 \times m_2}{A_2 \times m_1}$$

where

A_1 is the nominal surface area of the bale, in square millimetres;

A_2 is the surface area of the test specimen, in square millimetres;

m_1 is the nominal mass of the bale, in kilograms;

m_2 is the mass, in grams, of the ash or bale coating obtained from the test specimen from [3.3](#) or [Clause 4](#).

The final value of bale coating is obtained by averaging the individual values. The tolerance should be ± 5 %.

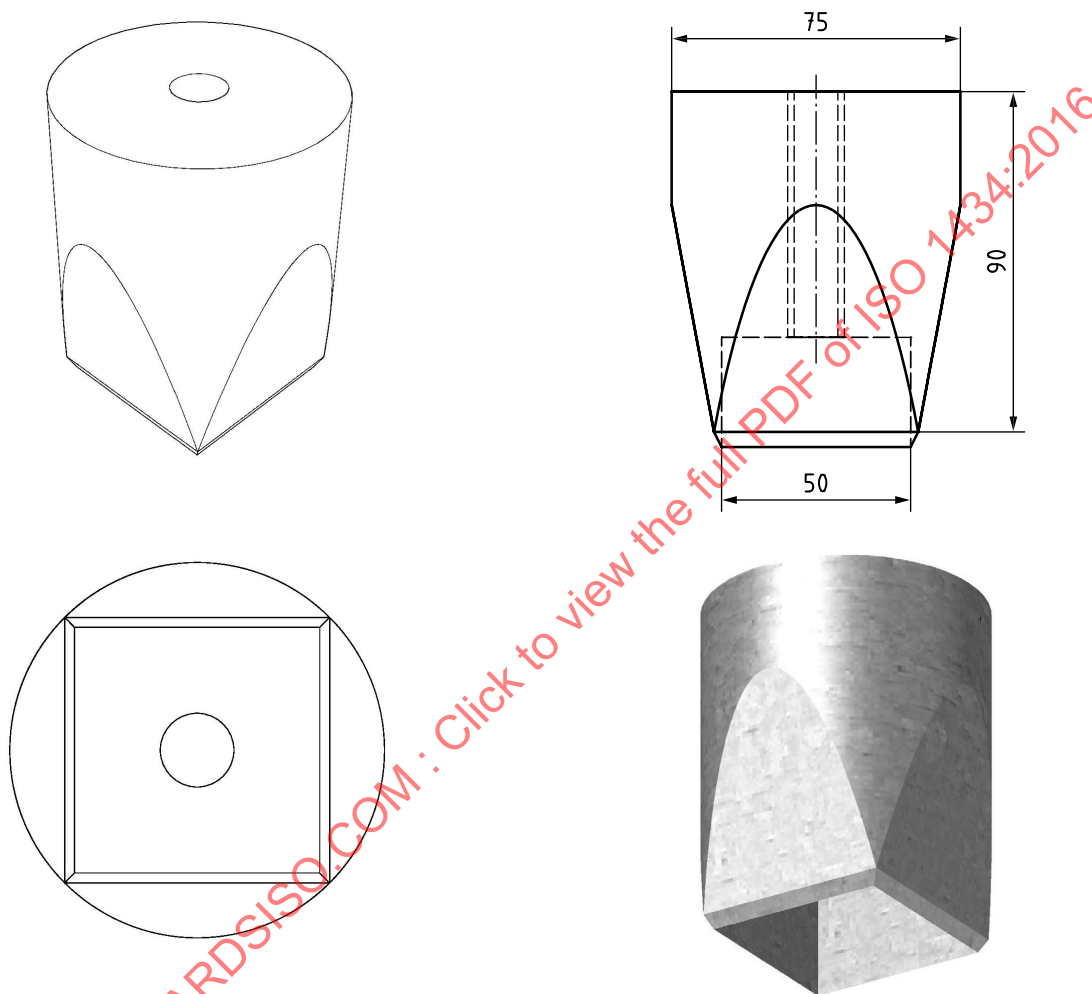
6 Test report

The test report shall include the following information:

- a) a reference to this International Standard, i.e. ISO 1434;
- b) a reference to the method used;
- c) all details necessary for the identification of the sample;
- d) any operation not specified in this International Standard and any operation regarded as optional;
- e) the date of the test.

Annex A (informative)

Sample cutting die



NOTE All dimensions are in millimetres. The only critical dimension is that of cutting edge, 50 mm².

Figure A.1 — Sample cutting die

Annex B

(informative)

Amount of bale coating

The “International Standards of Quality and Packing for Natural Rubber Grades” (The Green Book), Part V, Section 7.C, specifies that the maximum weight of bale coating solids shall not exceed 16 oz (0,45 kg) per bale (of 0,14 m³ in volume), i.e. 4 g bale coating per kilogram of rubber.

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