

INTERNATIONAL  
STANDARD

**ISO**  
**1306**

Fourth edition  
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**Rubber compounding ingredients — Carbon  
black (pelletized) — Determination of pour  
density**

*Ingrédients de mélange du caoutchouc — Noir de carbone (en granules) —  
Détermination de la masse volumique apparente*



Reference number  
ISO 1306:1995(E)

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 1306 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This fourth edition cancels and replaces the third edition (ISO 1306:1987), which has been technically revised.

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# Rubber compounding ingredients — Carbon black (pelletized) — Determination of pour density

**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 International Standard specifies a method for determining the pour density of all types of pelletized carbon blacks for use in the rubber industry.

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1124:1988, *Rubber compounding ingredients — Carbon black shipment sampling procedures*.

## 3 Principle

A measured volume of carbon black is weighed and the pour density calculated.

## 4 Apparatus

**4.1 Cylindrical container**, of 1 000 cm<sup>3</sup> capacity when filled to the top and of a recommended 100 mm ± 10 mm diameter, having a uniform height and no pouring lip or deformation of the wall.

Other capacities, such as 624 cm<sup>3</sup>, may be used if it can be shown that the same results are obtained.

**4.2 Straightedge or spatula**, at least 130 mm in length.

**4.3 Balance**, accurate to 0,1 g.

## 5 Procedure

Pour the carbon black into the centre of the tared cylindrical container (4.1) from a height of not more than 50 mm above the rim. Use a large enough excess to form a cone above the rim of the cylindrical container. Level the surface with a single sweep of the straightedge or spatula (4.2) held horizontally, and perpendicular to and in firm contact with the rim of the container. Weigh the container with the carbon black. Determine the mass of the carbon black to the nearest gram.

## 6 Expression of results

If the specified container is used, the pour density  $\rho_{ap}$ , in grams per cubic decimetre (or kilograms per cubic metre) is numerically equal to the mass, in grams, of the carbon black.

Alternatively, the pour density  $\rho_{ap}$  may be expressed in grams per cubic centimetre, using the formula

$$\frac{m}{V}$$

where

- $m$  is the mass, in grams, of the carbon black;
- $V$  is the capacity, in cubic centimetres, of the cylindrical container (4.1).

## 7 Precision and bias

**7.1** The precision data give an estimate of the precision as described below. The precision parameters shall not be used for acceptance/rejection testing of any group of materials without documentation that they are applicable to those particular materials and to the specific testing protocols that include this test method.

**7.2** These precision data are based on single tests on three samples by eight laboratories over a period of two days. The density of the samples ranged from about 345 kg/m<sup>3</sup> to about 450 kg/m<sup>3</sup>. Both the re-

peatability and reproducibility values given represent short-term testing. The precision is expressed in absolute terms.

**7.3** The repeatability (single operator)  $r$  has been estimated to be 3 kg/m<sup>3</sup>. Two single test results that differ by more than 3 kg/m<sup>3</sup> shall be considered suspect and require appropriate investigative action to be taken.

**7.4** The reproducibility (interlaboratory)  $R$  has been estimated to be 13 kg/m<sup>3</sup>. Two single test results, produced in separate laboratories, that differ by more than 13 kg/m<sup>3</sup> shall be considered suspect and require appropriate investigative action to be taken.

**7.5** In test method terminology, bias is the difference between an average test property value and an accepted reference (true) test property value. Reference values do not exist for this method since the value of the test property is defined solely by the test method. The bias cannot, therefore, be determined.

## 8 Test report

The test report shall include the following particulars:

- a) a reference to this International Standard;
- b) all details necessary for identification of the sample;
- c) the results obtained and the units in which they are expressed;
- d) the capacity of the cylindrical container, if not 1 000 cm<sup>3</sup>.

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