INTERNATIONAL STANDARD

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Rubber compounding ingredients — Carbon black — Determination of individual pellet crushing strength

Ingrédients de mélange du caoutchouc — Noir de carbone — Détermination de la force d'écrasement des granules individuels

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 8942 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*.

It cancels and replaces ISO/TR 8942:1988, which has been technically revised.

Introduction

Carbon black for the rubber industry is generally pelletized to reduce dust and facilitate handling. The property of individual pellet crushing strength, among several other properties, may have an influence on the dispersion of carbon black in polymers, on bulk handling and on conveying properties. For these purposes, carbon black is mostly pelletized to around 1 mm in diameter, but the pellet size can reach 1,7 mm. Therefore, in most of the existing test methods used to measure the individual pellet crushing strength, the pellets are selected in sizes ranging from 1 mm to 1,7 mm.

The individual pellet crushing strength is the force necessary to crush one pellet, and the value measured is absolute (i.e. neither per unit volume nor per unit surface area of the pellet). The value varies with the size of the pellet. Therefore, a narrower size range in the sample generally gives a narrower distribution of the measured individual pellet crushing strength.

This International Standard provides two methods for determining the individual pellet crushing strength of carbon black:

— Method A, specified in ASTM D5230, which uses a test sample of a certain pellet size range that is widely used in the industry for typical grades, prepared by passing a sample through a sieve that has an aperture of 1,4 mm to 1,7 mm.

— Method B, which uses a test sample prepared using a sieve that has an aperture of 1,0 mm. This method is used when a more precise result is required, such as in process control or in order to meet a customer's specification.

Rubber compounding ingredients — Carbon black — Determination of individual pellet crushing strength

1 Scope

This International Standard specifies two methods for the determination of the individual pellet crushing strength of carbon black for use in the rubber industry:

— method A: using pellets of size ranging from 1,4 mm to 1,7 mm;

— method B: using pellets of size 1 mm.

2 Normative references

The following referenced documents are indispensable for the application 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 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

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

ASTM D5230, *Standard Test Method for Carbon Black — Automated Individual Pellet Hardness*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
individual pellet crushing strength
force required to crush (i.e. fracture) a carbon black pellet under specified conditions

4 Principle

A number of pellets within the diameter range 1,4 mm to 1,7 mm (method A) or of diameter 1,0 mm (method B) are selected by sieving a carbon black sample (in method B, this is achieved by selecting only those pellets which, during sieving, become lodged in the apertures of a 1,0 mm aperture sieve). The pellets selected are placed one at a time between two parallel plates of a device capable of applying a force. The force which is being applied when the pellet fractures is recorded.

5 Method A

Testing is carried out in accordance with ASTM D5230.