INTERNATIONAL STANDARD

ISO 4652

Second edition
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Rubber compounding ingredients — Carbon black — Determination of specific surface area by nitrogen adsorption methods — Single-point procedures

Ingrédients de mélange du caoutchouc — Noir de carbone — Détermination de la surface spécifique par méthodes par adsorption d'azote — Modes opératoires à un point de mesure

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 4652 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 second edition of ISO 4652 cancels and replaces ISO 4652-1:1994, which has been technically revised. The revision includes the following changes:

— The number of the standard has been changed from ISO 4652-1 to ISO 4652, since there were no other parts.

— The title has been modified accordingly.

— A statement has been added to the scope that the multipoint method specified in ISO 18852 is the preferred method.

— The normative references in Clause 2 have been updated.

— The Ni-Count-1 apparatus used in method A is no longer available from the manufacturer. However, it has been decided to keep method A for those still using this apparatus. A note has been added at the beginning of Clause 3 to explain this.

Rubber compounding ingredients — Carbon black — Determination of specific surface area by nitrogen adsorption methods — Single-point procedures

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 four methods for the determination of the specific surface area of types and grades of carbon black for use in the rubber industry:

— method A using the Ni-Count-1 apparatus (Clause 3);

— method B using the Areameter apparatus (Clause 4);

— method C using gas chromatography (Clause 5);

— method D using the Monosorb surface-area analyser (Clause 6).

Somewhat different results might be obtained from the four methods. The degassing procedure used differs from method to method, and it is important to investigate the possibility of correcting the results by using standard reference blacks.

The results might also differ from those obtained using the multipoint method specified in ISO 18852, which is the preferred method.

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 1126, *Rubber compounding ingredients — Carbon black — Determination of loss on heating*

ISO 18852, *Rubber compounding ingredients — Determination of multipoint nitrogen surface area (NSA) and statistical thickness surface area (STSA)*

3 Method A, using Ni-Count-1 apparatus

NOTE Although the Ni-Count-1 apparatus is no longer being produced by the manufacturer, E.G. & G. Chandler Engineering, this method has been retained for the convenience of those who are still using this apparatus.

3.1 Principle

A test portion is degassed and weighed, then exposed to nitrogen at the temperature of liquid nitrogen. The amount of nitrogen adsorbed on to the carbon black surface at equilibrium is determined. From this value and the mass of the degassed test portion, the specific surface area is calculated.