INTERNATIONAL STANDARD 1437

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Carbon black for use in the rubber industry — Determination of sieve residue

Noir de carbone pour l'industrie des élastomères — Détermination du refus sur tamis

First edition — 1975-03-01

UDC 678.046.2 : 539.215.2

Ref. No. ISO 1437-1975 (E)

Descriptors : rubber industry, carbon black, determination of content, sieve residues, sieve analysis.

Price based on 2 pages

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 45 has reviewed ISO Recommendation R 1437 and found it technically suitable for transformation. International Standard ISO 1437 therefore replaces ISO Recommendation R 1437-1970 to which it is technically identical.

ISO Recommendation R 1437 was approved by the Member Bodies of the following countries :

Australia	Greece	Spain
Austria	Hungary	Sweden
Brazil	India	Switzerland
Canada	Iran	Thailand
Colombia	Israel	Turkey
Cuba	Italy	United Kingdom
Czechoslovakia	Korea, Rep. of	U.S.A.
Egypt, Arab Rep. of	Netherlands	U.S.S.R.
France	New Zealand	
Germany	Poland	

No Member Body expressed disapproval of the Recommendation.

No Member Body disapproved the transformation of ISO/R 1437 into an International Standard.

Printed in Switzerland

Carbon black for use in the rubber industry — Determination of sieve residue

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for determining the water-wash sieve residue from regular, untreated carbon black for the rubber industry. It may not be applicable to oil-treated blacks because the oil could prevent proper wetting of the black by water.

2 REFERENCE

ISO 565, *Test sieves — Woven metal wire cloth and perforated plate — Nominal sizes of apertures.*

3 PRINCIPLE

Washing of a known mass of carbon black through a test sieve by a controlled flow of water, and drying and weighing of the residue.

The test sieve aperture is chosen from the range given as required by the appropriate material specification.

4 APPARATUS

4.1 Sieving apparatus comprising the following main items :

4.1.1 Test sieve, on which the residue is retained. Test sieves shall be of phosphor bronze or stainless steel, having the characteristics described in ISO 565, and shall have nominal apertures of 500 and 45 μm.

4.1.2 Funnel or **container,** into the bottom of which the test sieve fits.

4.1.3 Nozzle, fed with clean water under controlled pressure by which the carbon black is washed through the sieve.

4.1.4 Water pressure regulating device.

4.1.5 Filter, in the water supply line, incorporating a wire screen at least as fine as that in the test sieve.

NOTE — Suitable apparatus includes the Gallie-Porrit type of apparatus and that recommended in ASTM D — 1514.

4.2 Balance, with an accuracy of 0,1 g.

4.3 Analytical balance, with an accuracy of 0,1 mg.

4.4 Weighing dishes.

4.5 Oven capable of being regulated at 105 ± 2 °C.

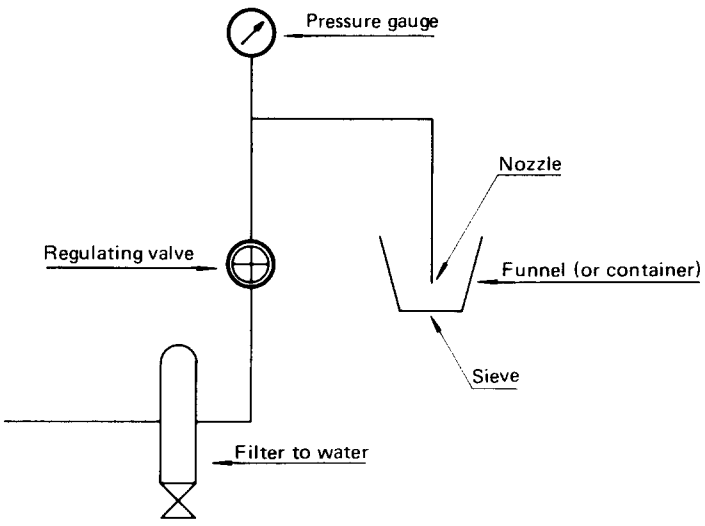

FIGURE — **Schematic diagram of apparatus**

5 PROCEDURE

5.1 Clean the filter used in the water lines before starting a test.

5.2 Regulate the water pressure to the recommended pressure of 0,2 ± 0,04 MN/m². Attach a sieve (4.1.1) of the specified aperture to the funnel or container (4.1.2) and allow water to flow through it for 3 min. Examine the sieve for particles. If none are observed the apparatus is ready for use.

5.3 Weigh a test portion of carbon black of at least 100 g.

5.4 Start the water flow. Add carbon black to the funnel or container. Use care in adding to prevent plugging of the sieve.

NOTE – A wetting agent may be used before starting the water flow.

5.5 Wash down the carbon black from the funnel or container sides. Continue to wash the residue on the sieve until the wash water coming through the sieve is clear.

5.6 Remove the sieve and rub the residue lightly with the finger to break up any agglomerates of carbon black which have not been thoroughly wetted by the water. Do not exert so much pressure with the finger that the sieve mesh is distorted.

5.7 Replace the sieve and wash for an additional 2 min.

5.8 Remove the sieve and dry in the oven (4.5) at 105 ± 2 °C.

5.9 Transfer the residue to a tared weighing dish (4.4) and weigh.

NOTE – *Precautions :*

1 Keep the apparatus clean at all times to prevent contamination.

2 Examine the sieve each time it is used to make sure no cracks or holes develop.

3 Examine the wire screen in the filter periodically to ascertain if the filter screen is in good condition.

6 EXPRESSION OF RESULTS

The sieve residue is given, as a percentage by mass, by the formula :

$$\frac{m_1}{m_0} \times 100$$

where

m_0 is the mass, in grams, of the test portion;

m_1 is the mass, in grams, of the residue retained on the sieve.

7 TEST REPORT

The test report shall include the following information :

a) proper identification of the sample;

b) indication of the sieve aperture;

c) type of apparatus used and water pressure.