

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 556

DETERMINATION OF THE MICUM INDICES OF COKE

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BRIEF HISTORY

The ISO Recommendation R 556, *Determination of the Micum Indices of Coke*, was drawn up by Technical Committee ISO/TC 27, *Solid Mineral Fuels*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question by the Technical Committee began in 1955 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In June 1963, this Draft ISO Recommendation (No. 571) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Argentina	Germany	Romania
Australia	India	Spain
Austria	Iran	Switzerland
Belgium	Italy	Turkey
Canada	Netherlands	United Kingdom
Chile	New Zealand	U.S.S.R.
Czechoslovakia	Poland	Yugoslavia
Denmark	Portugal	
France	Republic of South Africa	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in February 1967, to accept it as an ISO RECOMMENDATION.

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DETERMINATION OF THE MICUM INDICES OF COKE

1. SCOPE

This ISO Recommendation describes the method of determining the strength of coke by the Micum * test.

2. PRINCIPLE

Coke, sieved to retain pieces over a specified size, is subjected to treatment under standardized conditions in a rotating drum. The results of size analysis of the treated coke are used as indices of its resistance to breakage on impact and by abrasion.

3. APPARATUS

3.1 Test drum (see Figure below); cylindrical drum, 1000 ± 5 mm in internal length and 1000 ± 5 mm in internal diameter, of steel plate of minimum thickness 5 mm (as used, i.e. even after wear) and preferably of welded construction.

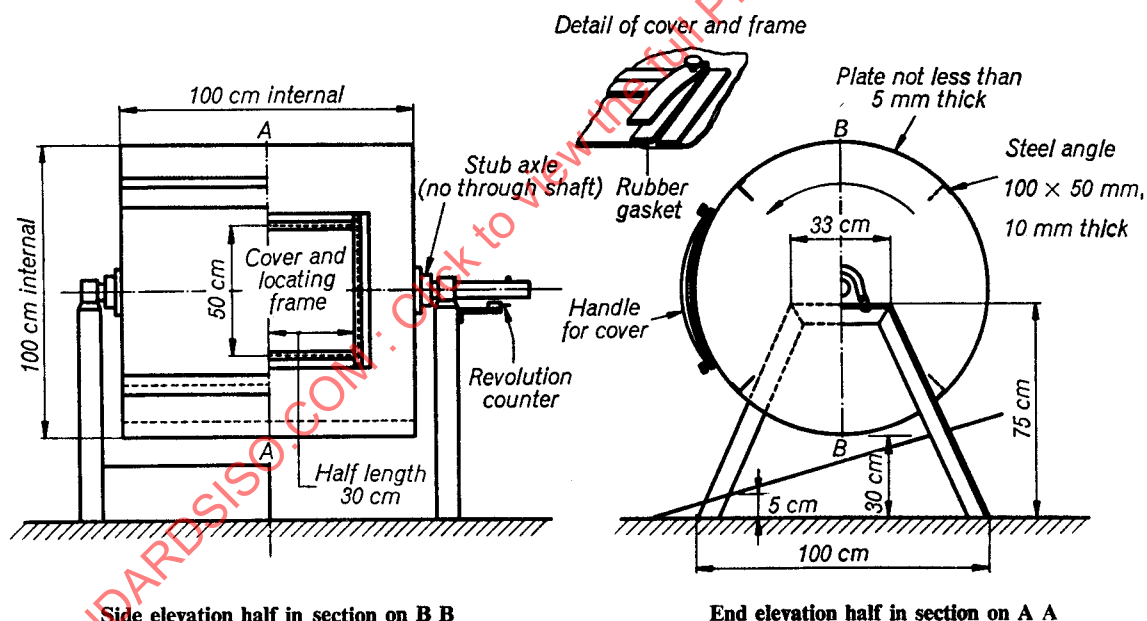


FIGURE. — Micum drum

Four steel angles, each 100 mm (see Note, p. 6) $\times$ 50 mm, 10 mm thick, and of the full length of the drum, are fixed to the internal cylindrical surface, parallel to the axis of the drum and spaced at 90° intervals so as to divide the periphery into four equal sectors. They are fixed so that the legs which are 100 mm long point towards the axis, the other legs being attached to the surface and orientated in a direction opposite to the direction of rotation of the drum.

* Micum: Abbreviation of "Mission interalliée de contrôle des usines et des mines" (Interallied Control Mission of Works and Mines).

The drum has an opening in the cylindrical wall, for charging and discharging. This should be as large as possible to facilitate emptying and cleaning of the drum. It is recommended that the size of this opening should be a minimum of 600 mm × 500 mm, the length being parallel to the axis of the drum. The charging hole is closed by a curved cover of suitable thickness which can be fixed in such a way that, when it is in place, the inside face is level with the internal surface of the drum. A rubber gasket may with advantage be used on the cover to minimize loss of dust.

The drum is mounted in bearings by means of a stub axle attached to each end (i.e. the axle should not pass through the drum), to allow it to be rotated on its horizontal axis. The bearings are mounted on supports of a height which will enable the drum to be emptied and cleaned conveniently after the test. A sloping plate is fitted underneath and close to the drum to facilitate collection of the coke when it is discharged. It is desirable that the test apparatus should be fitted with a revolution counter, preferably with an automatic device to stop the drum after 100 revolutions.

NOTE. — The steel angles should be replaced when they wear to 95 mm.

- 3.2 **Weighing machine**, suitable for weighing a quantity of coke up to 50 kg accurately to the nearest 0.1 kg.
- 3.3 **Sieves** * of round aperture size respectively 60, 40 and 10 mm. A sieve of round aperture size 20 mm may also be required. When the wear on any aperture exceeds 2 per cent, the aperture is blanked off or the sieve changed.
- 3.4 **Metal containers** of light weight for the sample and the fractions sieved from it. The largest container should be capable of holding 50 kg of lump coke.

4. SAMPLE

A minimum total mass of 160 kg of coke of size retained on a 60 mm aperture sieve is required and should be collected from the gross sample of the consignment of coke. The distribution of sizes of the test sample should be the same as found in a preliminary size analysis of the whole of the gross sample (see section 6 below).

Normally, two tests are carried out, each on 50 ± 0.5 kg of coke from the sample, weighed accurately to the nearest 0.1 kg. The moisture content of the coke as tested should not exceed 5 per cent.

5. PROCEDURE

Carefully charge the 50 kg sample of coke into the drum, thoroughly cleaned from any previous residue, in such a way as to avoid breakage, and put the cover in place. Rotate the drum at a constant speed, completing 100 revolutions in a period of 4 minutes $\pm$ 10 seconds. Stop the drum after 100 revolutions; take off the cover, carefully remove the product and sieve it on the 40 and 10 mm sieves. If desired, sieves of 60 mm, 20 mm or other sizes may be used. Determine and record the cumulative mass to minimize weighing errors in the cumulative percentage. Any difference between the sum of the masses of all the fractions and the mass of the coke charged should be added to the mass of the fraction under 10 mm. If this loss exceeds 0.7 per cent of the mass of the coke charged, the test is rejected.

* Sieve plate thickness, wear tolerance and other details will be added later after consultation with Technical Committee ISO/TC 24, *Sieves, Sieving and other Sizing Methods*.