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International Standard



556

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ANSI International Unit

Coke (greater than 20 mm in size) — Determination of mechanical strength

Coke (dimension supérieure à 20 mm) — Détermination de la cohésion

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Foreword

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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.

International Standard ISO 556 was developed by Technical Committee ISO/TC 27, *Solid mineral fuels*, and was circulated to the member bodies in August 1979.

It has been approved by the member bodies of the following countries :

Australia	France	South Africa, Rep. of
Austria	Germany, F. R.	Spain
Belgium	Hungary	Turkey
Canada	India	United Kingdom
Chile	Japan	USA
China	Netherlands	USSR
Egypt, Arab Rep. of	Poland	

No member body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 556-1967 and International Standard ISO 1881-1973, of which it constitutes a technical revision.

Coke (greater than 20 mm in size) — Determination of mechanical strength

1 Scope and field of application

This International Standard specifies a method for the determination of the mechanical strength of coke having a particle size greater than 20 mm.

2 References

ISO 728, *Coke size analysis (nominal top size greater than 20 mm)*.

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

3 Principle

A sample of coke greater than 20 mm in size and of known size distribution is subjected to mechanical stresses in a rotating drum. The degree of breakdown of the coke is evaluated by a process of sieving and size analysis after 100 drum revolutions (Micum test) and, if desired, after 500 drum revolutions (Irsid test).

4 Apparatus

4.1 Cylindrical steel drum, having the following dimensions (see the figure) :

Length $1\,000 \pm 5$ mm

Diameter $1\,000 \pm 5$ mm

Minimum thickness 5 mm

The drum shall be replaced if the thickness falls below 5,0 mm due to wear. Inside the drum, parallel to its axis and dividing the wall into four equal areas, shall be fixed four angle sections (or lifting flights). Each lifting flight, equal in length to the length of the drum and constructed of $100\text{ mm} \times 50\text{ mm} \times 10\text{ mm}$ thick mild steel angle, shall be fixed rigidly to the full length of the internal curved surface of the drum, parallel to the axis of the drum in such a way that the flange of width 100 mm points towards the axis of the drum and the narrower flange, in contact with the curved surface of the drum, points in the direction opposite to that of rotation of the drum. The angle sections (or lifting flights) shall be replaced when they wear to 95 mm.

The drum shall be carried on two stub-axles, at least 250 mm in length, rotating in horizontal journal bearings which are sup-

ported in a framework mounted at either side of the drum. The clearance below the drum shall be not less than 230 mm and not more than 300 mm to enable the drum to be conveniently emptied. The drum shall be capable of being rotated by hand in either direction to facilitate emptying. Suitable mechanical means shall be available to set the drum in motion at a constant rotational frequency of $25 \pm 1\text{ min}^{-1}$ and the drum shall be fitted with a revolution counter and relay system which can be pre-set to stop the drum after any desired number of revolutions.

The drum shall have an opening on the cylindrical surface through which the coke may be charged and discharged. The opening shall be at least 600 mm long and 500 mm wide to facilitate cleaning and emptying. The opening shall be fitted with a cover, the inner portion of which shall be of 10 mm mild steel plate of the same curvature as the drum, and which shall be of the same size as the opening so that when the cover is secured the inside face is substantially level with the internal surface of the drum. A rubber gasket may with advantage be fitted around the cover to minimize loss of dust.

4.2 Tray, approximately $1\,500\text{ mm} \times 1\,100\text{ mm}$ and 200 mm deep, constructed from a suitable abrasion- and wear-resistant material (1,22 mm galvanized sheet has been found suitable), for receiving the coke on discharge. One end wall of the tray shall be inclined outwards at 45° to facilitate emptying.

4.3 Weighing machine, preferably of the platform type, of maximum capacity 100 kg and such that the weighing error does not exceed 0,1 kg.

4.4 Round-hole test sieves, comprising a series of perforated plates with circular apertures that will enable a complete size analysis of the coke under examination to be determined.

Test sieves with apertures of diameter 10, 20 and 40 mm shall be included. Others in the series may be (for example) 31,5, 63, 80 and 100 mm. When wear causes the diameter of any of the apertures to exceed its nominal diameter by more than 2 %, the aperture shall be blanked off or the test sieve shall be replaced. Not more than 25 % of the available apertures of any of the test sieves shall be blanked off.

4.5 Series of light containers, the largest of which is capable of holding 50 kg of coke (i.e. capacity of at least $0,12\text{ m}^3$).