

Testing of barbecue coal and barbecue coal briquettes



Example of barbecue coal briquettes



Example of barbecue coal

Why test barbecue products?

The consumers of today are very quality-conscious, and the quality of barbecue products also has the attention of the media.

Barbecue coal and barbecue coal briquettes are produced in different places in the world, and the quality may differ a lot.

What is good quality?

Barbecue products should be free from impurities and additions that may cause inadmissible smoke and influence the taste of the barbecued food.

The products shall be ignitable, without danger to the surroundings, and shall provide the necessary heat for cooking. No large amount of dust should be present, as this may create nuisances for the ignition and is without utility value.

The quality of charcoal depends on the production process and of the wood material used. By heating wood without contact with air, cellulose and other "volatile matter" contents in the wood are partly converted into coke. The degree of the conversion is of importance for the energy content of the charcoal as the net calorific value of pure and dry wood is 19000 KJ/kg and for pure coke, just below 33000 KJ/kg. For ignition of charcoal, however, some "volatile matter" should remain.

Briquettes are prepared by pressing pulverised charcoal from wood or other biomasses or heat-treated mineral coal, using a binder as e.g. corn flour. Mineral coal is fossilised plant material, i.e. from peat to anthracite coal.

The quality of briquettes depends on the quality of the applied coal and the added materials in connection with the pressing. The content of ash has e.g. been found to vary between 4 and 40%.

Testing

Different standards or directions exist specifying requirements on barbecue charcoal and barbecue charcoal briquettes, and how to test these. For the Danish market exists the European standard EN 1860-2 and DNV 5180:2. DNV 5180:2 is the direction of Dansk Varefakta (Danish Institute for Informative Labelling) as regards labelling of barbecue products with "Varefakta". Additionally, the German standard DIN 51749 is still used to some extent, even though it was withdrawn at the publication of EN 1860-2, since the DIN places somewhat stricter requirements.

FORCE Technology provides testing according to these standards and directions, including:

DNV 5180:2

- Net weight
- Particle size distribution (sieve analysis)
- Content of moisture, ash, "volatile matter" and "Fixed Carbon"
- Heating time
- Volatile sulphur (only mineral products)
- Net calorific value (voluntary information).

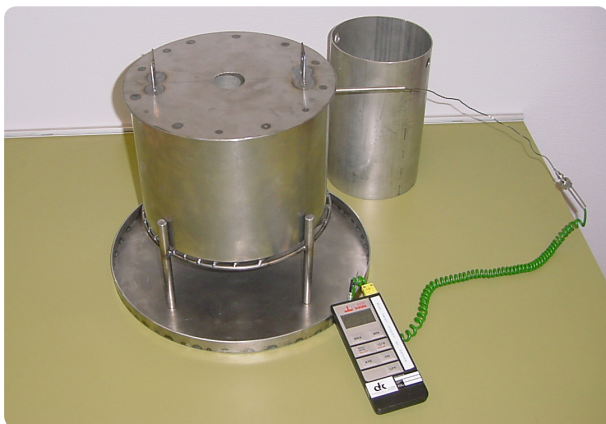
EN 1860-2

- Particle size distribution (sieve analysis)
- Content of moisture, ash, "volatile matter" and "Fixed Carbon"
- Petrographic analysis.

DIN 51749 (withdrawn)

- Particle size distribution (sieve analysis)
- Content of moisture, ash, "volatile matter" and "Fixed Carbon".

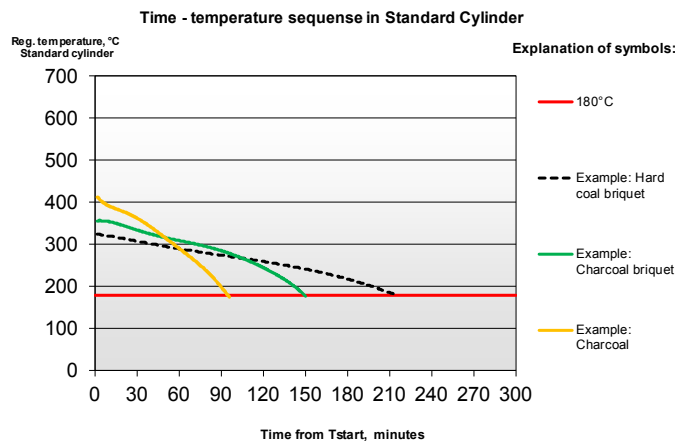
DIN 51749 only includes barbecue products produced of pure wood, EN 1860-2 includes barbecue products made of pure wood or other biomass and DNV 5180:2 may also include briquettes made from mineral coals.



Test equipment, heating time test.

Further information

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Examples of registered burn-out sequences.

Determination of heating time

Provision of sufficient heat for the time necessary is an important requirement on the quality of a barbecue product.

Traditional fuel analysis does not provide user-relevant information about e.g. the heat release. A high net calorific value may indicate a quality product with the opportunity of longer cooking times. However, the heat release also depends on conditions such as the density of the product and the particle size distribution.

Further a product with a low content of ash and a high content of "volatile matter" may have a calorific value similar to a product with a higher content of ash, but a low content of "volatile matter" – and these products will not provide equal heat conditions in a barbecue.

FORCE Technology's test method "Determination of heating time in standard cylinder", included in DNV 5180:2 is developed to enable a comparison of the heat release of barbecue products. By this method, continuous registration of the temperature during burn out of the product at well-defined conditions take place. The "Standard heating time" is defined as the number of minutes a barbecue product is capable of maintaining a temperature of more than 180 °C in the specified cylinder after ignition.

Competences

FORCE Technology is an independent, approved technological service company with long standing experience and expertise within utilisation and testing of solid fuels.