International Standard

ISO 18847

Solid biofuels — Determination of particle density of pellets and briquettes

Biocombustibles solides — Détermination de la masse volumique unitaire des granulés et des briquettes

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Foreword

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This document was prepared by Technical Committee ISO/TC 238, *Solid biofuels,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 335, *Solid biofuels,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 18847:2016), which has been technically revised.

The main changes are as follows:

— editorial changes made;

— ISO 21945 inserted as a normative reference;

— method for the determination of particle density is specified in more detail;

— informative Annex B on a liquid displacement method to estimate the particle density of pellets added.

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Introduction

Particle density is a fuel parameter of pellets and briquettes which is often considered when describing the degree of compaction of the raw material used. Particle density can be highly specific for the respective type or species of biomass and thus, it also characterizes the material's general ability to be compacted. High particle density is often associated with high resistance to abrasion or low susceptibility towards fracturing during handling and storage. A high particle density also generally leads to reduced storage volume demands and to a lower filling level in a combustion chamber at constant fuel mass flow. Particle density can also affect the heat transfer rate within the fuel and thus, it can have an impact on fuel ignition and on the dynamics of gasification.

Apart from the buoyancy method which is described in this document as a reference method, larger particles (briquettes) are sometimes easier tested by simple stereometric means. For internal laboratory practices, such a procedure is also presented in Annex A. For small particles (pellets), this procedure is not recommended.

For pellets, a simplified method using the displacement of a liquid by the pellets is available, which can be used as an on-site method, and is described in Annex B.

Pellets disintegrate in water relatively fast, but with the buoyancy method the particle density is sufficiently stable for about 30 s (see [3]). To improve reproducibility, the reading of the results is fixed at 5 s. This also ensures synchronization with the results of the estimation method by liquid displacement.

For the determination of particle density, several other methods are available. Normally the results show only minor deviations.