International Standard

ISO 18708

Solid recovered fuels — Determination of bulk density

Combustibles solides de récupération — Détermination de la masse volumique apparente

First edition
2025-10

Reference number
ISO 18708:2025(en)

© ISO 2025



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Principle ... **1**
5 Apparatus ... **2**
5.1 Measurement containers ... 2
5.1.1 General ... 2
5.1.2 Large container ... 2
5.1.3 Medium container ... 2
5.1.4 Small container ... 3
5.2 Scale/Balances ... 3
5.2.1 Scale/Balance 1 ... 3
5.2.2 Scale/Balance 2 ... 3
5.3 Scantling ... 3
5.4 Wooden board ... 4
6 Sampling and sample preparation ... **4**
7 Operation ... **4**
7.1 Determination of the container volume ... 4
7.2 Combination of container size and dropping height ... 4
7.2.1 General ... 4
7.2.2 Fluff ... 4
7.2.3 Pellet ... 5
7.3 Measurement procedure ... 5
8 Calculation of bulk density ... **6**
8.1 Calculation of bulk density as received ... 6
8.2 Calculation of bulk density of dry matter ... 6
9 Performance characteristics ... **6**
9.1 General ... 6
9.2 Repeatability limit ... 6
9.3 Reproducibility limit ... 6
10 Test reports ... **7**
Annex A (informative) **Example of an apparatus for controlled shock exposure** ... **8**
Annex B (informative) **Results of interlaboratory test** ... **9**
Annex C (informative) **Report of experimental study on the determination of bulk density** ... **10**
Annex D (informative) **Environmental aspects** ... **22**
Bibliography ... **24**

© ISO 2025 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 300, *Solid recovered materials, including solid recovered fuels*. in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 343, *Solid recovered materials, including solid recovered fuels,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© ISO 2025 – All rights reserved

Introduction

Bulk density is one of the main quality parameters of solid recovered fuels (SRF). It is needed e.g. in a sampling process (volume of sampling tools, volume primary sample), in assessing transport capacity or storage space required or energy density (MWh/m^3) of SRF. Bulk density is not an absolute value, therefore conditions for its determination are standardised in order to gain comparative measuring results.

This document describes the testing method for determining the bulk density of SRFs to produce solidified fuels from the combustibles in waste by processing, such as compressing, drying, crushing, moulding and solidifying, and utilize them as an energy source.

© ISO 2025 – All rights reserved

Solid recovered fuels — Determination of bulk density

1 Scope

This document specifies a method for determining the bulk density of solid recovered fuels (SRF) by the use of a standard measuring container. This method is applicable to all SRFs with a nominal top size of particle less than 1/3 of the container diameter specified in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21637, *Solid recovered fuels — Vocabulary*

ISO 21645, *Solid recovered fuels — Methods for sampling*

ISO 21646, *Solid recovered fuels — Sample preparation*

ISO 21660-3, *Solid recovered fuels — Determination of moisture content using the oven dry method — Part 3: Moisture in general analysis sample*

EN 15415-1, *Solid recovered fuels — Determination of particle size distribution - Screen method for small dimension particles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21637 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
bulk density
ρ
mass of a portion (i.e. a large quantity of particulate material) of a solid fuel divided by the volume of the container which is filled by that portion under specific conditions

[SOURCE: ISO 16559:2022, 3.40, modified — ρ added as the symbol for bulk density and definition revised adding reference to "solid fuel".]

4 Principle

A standard container is filled with the test portion of a given size and shape, densified by specified shock exposure and weighed afterwards. The bulk density is calculated from the net weight per standard volume and reported with the determined moisture content.

© ISO 2025 – All rights reserved