

ICS 75.160.10

English Version

**Solid recovered fuels - Methods for the determination of the  
content of volatile matter**

Combustibles solides de récupération - Méthodes pour la  
détermination de la teneur en composés volatils

Feste Sekundärbrennstoffe - Verfahren zur Bestimmung  
des Gehaltes an flüchtigen Substanzen

This Technical Specification (CEN/TS) was approved by CEN on 25 March 2006 for provisional application.

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## Foreword

This document (CEN/TS 15402:2006) has been prepared by Technical Committee CEN/TC 343 "Solid recovered fuels", the secretariat of which is held by SFS.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

The volatile matter is determined as the loss in mass less that due to moisture, when solid recovered fuel is heated out of contact with air under standardised conditions. The test is empirical and, in order to ensure reproducible results, it is essential that the rate of heating, the final temperature and the overall duration of the test are carefully controlled. It is also essential to exclude air from the solid recovered fuel during heating to prevent oxidation. The fit of the crucible lid is therefore critical.

The moisture content of the sample is determined at the same time as the volatile matter so that the appropriate correction can be made. Mineral matter associated with the sample can also lose mass under the conditions of the test, the magnitude of the loss being dependent on both the nature and the quantity of the minerals present.

This Technical Specification is primarily geared toward laboratories, producers, suppliers and purchasers of solid recovered fuels, but is also useful for the authorities and inspection organizations.

The method specified in this Technical Specification is based on CEN/TS 15148 [1] as well as ISO 562 [2].

## 1 Scope

This Technical Specification specifies the requirements and a method for the determination of volatile matter of solid recovered fuels.

## 2 Normative references

The following referenced documents are indispensable for the application of this Technical Specification. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 15357:2006, *Solid recovered fuels — Terminology, definitions and descriptions*

prCEN/TS 15442, *Solid recovered fuels — Methods for sampling*

prCEN/TS 15443, *Solid recovered fuels — Methods for laboratory sample preparation*

CEN/TS 15414-3, *Solid recovered fuels — Determination of moisture content using the oven dry method — Part 3: Moisture in general analysis sample*

## 3 Terms and definitions

For the purposes of this Technical Specification, the terms and definitions given in CEN/TS 15357:2006 apply.

## 4 Principle

A test portion of the general analysis sample is heated out of contact with ambient air at  $(900 \pm 10) ^\circ\text{C}$  for 7 min. The percentage of volatile matter is calculated from the loss in mass of the test portion after deducting the loss in mass due to moisture.

## 5 Apparatus

### 5.1 Furnace

The furnace shall be heated electrically and capable of maintaining a zone with uniform temperature of  $(900 \pm 10) ^\circ\text{C}$ . It may be of the stop-ended type or fitted at the back with a flue with a diameter of about 25 mm and a length of 150 mm (see Figure 1).

NOTE 1 It is important for furnaces with flues that the furnace door seals well. The flue should not reach far out of the oven and should be fitted with a butterfly valve to restrict airflow through the furnace.

The heat capacity of the furnace shall be such that, with an initial temperature of  $(900 \pm 10) ^\circ\text{C}$ , the temperature is regained within 4 min after insertion of a cold stand and its crucibles. The temperature shall be measured with a thermocouple, as specified in 5.2.

NOTE 2 Observing the temperature is very important in order to compensate for inherent deviations of the temperature measurement and lack of uniformity regarding the temperature distribution.

Usually the furnace will be designed specifically either for multiple determinations using a number of crucibles in one stand or for receiving one crucible and its stand. In the first case, the zone of uniform temperature shall be at least  $160 \text{ mm} \times 100 \text{ mm}$ ; in the latter case, a zone of diameter 40 mm is sufficient.

A position for the crucible stand shall be chosen within the zone of uniform temperature and this position shall be used for all determinations.