

Solid recovered fuels - Determination of the current rate of aerobic microbial activity using the real dynamic respiration index

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15590:2011 sisaldab Euroopa standardi EN 15590:2011 ingliskeelset teksti. Standard on kinnitatud Eesti Standardikeskuse 30.09.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas. Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 07.09.2011. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 15590:2011 consists of the English text of the European standard EN 15590:2011. This standard is ratified with the order of Estonian Centre for Standardisation dated 30.09.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation. Date of Availability of the European standard text 07.09.2011. The standard is available from Estonian standardisation organisation.
--	---

ICS 75.160.10

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: 605 5050; E-mail: info@evs.ee

English Version

**Solid recovered fuels - Determination of the current rate of
aerobic microbial activity using the real dynamic respiration
index**

Combustibles solides de récupération - Détermination du
taux d'activité microbienne utilisant l'indice de respiration
dynamique

Feste Sekundärbrennstoffe - Bestimmung des aktuellen
Grades aerober mikrobieller Aktivität mittels des realen
dynamischen Respirationsindex

This European Standard was approved by CEN on 15 July 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Symbols and abbreviations	6
5 Principle	6
6 Apparatus	6
7 Procedure	7
7.1 Step 1 – Procedure sample preparation (if required)	7
7.2 Step 2 – Instrumentation calibration	8
7.3 Step 3 – Loading the reactor	8
7.4 Step 4 – Analysis set up	8
8 Calculation of the <i>RDRI</i> results	8
9 Storage and labelling samples	9
10 Test reports	9
Annex A (informative) <i>RDRI</i> trend	11
Annex B (normative) <i>RDRI</i> interpretation	12
Annex C (informative) Results of the inter-laboratory test	13
C.1 Introduction	13
C.2 Laboratory analysis	13
C.3 Statistical analysis	13
Bibliography	16

Foreword

This document (EN 15590:2011) has been prepared by Technical Committee CEN/TC 343 “Solid recovered fuels”, the secretariat of which is held by SFS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2012, and conflicting national standards shall be withdrawn at the latest by March 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TS 15590:2007.

The following changes have been introduced:

- title and scope change; potential microbial self-heating is revised by current rate of aerobic microbial activity;
- results of inter-laboratory tests supplemented as an informative Annex C.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, 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

This document specifies the method used for the determining the current rate of aerobic microbial activity of SRF using the real dynamic respirator index.

The current rate of aerobic microbial activity measures the biological stability under the actual chemical and physical properties of the SRF. The biological stability determines the extent to which readily biodegradable organic matter has decomposed. Therefore, the *RDRI* identifies the actual point reached in the decomposition process and represents a gradation on a recognised scale of values.

1 Scope

This European Standard specifies a method to determine the current rate of aerobic microbial activity of a solid recovered fuel. The methods indirectly estimate the potentiality of odours production, vectors attraction etc. The current rate of biodegradation can be expressed in milligrams $O_2 \text{ kg}^{-1} \text{ dm h}^{-1}$.

WARNING — SRF can contain potentially pathogenic organisms. Take appropriate precautions when handling them and those whose properties are unknown.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 15357:2011, *Solid recovered fuels — Terminology, definitions and descriptions*

EN 15443, *Solid recovered fuels — Methods for the preparation of the laboratory sample*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15357:2011 and the following apply.

3.1

easily biodegradable organic compounds

organic substances available for decomposition by micro-organisms within a real dynamic respiration test

3.2

hourly real dynamic respiration index

value of respiration index calculated every hour

3.3

lag or latency phase

interval of time required for the microbial flora to acclimatize during the course of the real dynamic respirometric test

3.4

mean particle size

aperture size of the sieve used for determining the particle size distribution of solid recovered fuels through which at least 50% by mass of the material passes

3.5

respiration index

rate of oxygen uptake expressed as milligram oxygen per kilogram total dry matter (dm) per hour

3.6

real dynamic respiration test

test measuring the respiration index under specific conditions including forced air flow

3.7

real dynamic respiration index

RDRI

average value of the respiration indexes representing 24 h showing the highest aerobic microbial activity

NOTE See Figure A.1.