



**NSAI**  
Standards

Irish Standard  
I.S. EN 15415-3:2012

# Solid recovered fuels - Determination of particle size distribution - Part 3: Method by image analysis for large dimension particles

## I.S. EN 15415-3:2012

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces:*

*This document is based on:*  
EN 15415-3:2012

*Published:*  
23 April, 2012

This document was published under the authority of the NSAI and comes into effect on:  
23 April, 2012

**ICS number:**

75.160.10

**NSAI**  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

**Sales:**  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

ICS 75.160.10

English Version

## Solid recovered fuels - Determination of particle size distribution - Part 3: Method by image analysis for large dimension particles

Combustibles solides de récupération - Détermination de la distribution granulométrique - Partie 3: Méthode par analyse d'images des particules de grande dimension

Feste Sekundärbrennstoffe - Bestimmung der Partikelgrößenverteilung - Teil 3: Bildanalysenverfahren für große Partikel

This European Standard was approved by CEN on 9 March 2012.

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, Turkey and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

<b>Contents</b>		<b>Page</b>
Foreword.....		3
Introduction .....		4
1	Scope .....	4
2	Normative references .....	4
3	Terms and definitions .....	5
4	List of symbols and abbreviations.....	6
5	Principle.....	6
5.1	Principles of sampling .....	6
5.2	Principle of determining the dimension(s).....	7
5.3	Principle of filaments characterisation .....	8
6	Apparatus .....	8
7	Procedure .....	8
7.1	Preparation of the sampling plan.....	8
7.2	Procedure for taking the field sample and producing the laboratory sample(s) .....	9
7.3	Procedure for quantification of maximum projected length and characterisation of filaments .....	10
8	Precision.....	11
9	Test report .....	11
Bibliography.....		13

## Foreword

This document (EN 15415-3:2012) 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 October 2012, and conflicting national standards shall be withdrawn at the latest by October 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.

EN 15415, *Solid recovered fuels — Determination of particle size distribution*, consists of the following parts:

- *Part 1: Screen method for small dimension particles*
- *Part 2: Maximum projected length method (manual) for large dimension particles*
- *Part 3: Method by image analysis for large dimension particles*

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, Turkey and the United Kingdom.

## Introduction

This document is dedicated to outlining an optical method for characterizing the size of pieces of solid recovered fuel (SRF) that exhibit an irregular shape and are generally large in size. Typical examples are shredded end-of-life tyres or demolition woods.

When such products reach the end-of-life stage, they continue to exhibit the very strong mechanical properties for which they were designed and fabricated. For instance, tyres are designed and fabricated to withstand cutting. Therefore, it is wise to minimise shredding when producing SRF from these end-of-life products. This results in a general in production of SRF pieces exhibiting an irregular shape and large size.

These SRF cannot be characterised using the sieving method specified in EN 15415-1 which utilises well-known distribution curves and a series of test sieves. Consequently, the method specified in this document is an optical method based on the determination of the maximum projected length and accompanied by an appropriate statistical evaluation. This maximum projected length approach is needed for sake of testing; but it is mainly needed to facilitate the use of these solid recovered fuels. Safe transportation (e.g. with conveyer) and introduction into the combustion zone are dependent on the design and operations adapted to such maximum length.

In this document, the maximum projected length determination is complemented with a characterisation of the filaments protruding from the SRF pieces (see 3.1).

This document is based on CEN/TS 14243, AFNOR XP T47-753, AFNOR XP T47-756, AFNOR XP T47-757, AFNOR NF X11-696:1989 and ISO 13320.

## 1 Scope

This European Standard specifies the determination of particle size distribution of solid recovered fuels using an image analysis method. It applies to both agglomerated and non-agglomerated solid, recovered, fuel pieces exhibiting an irregular shape, such as shredded end-of-life tyres and demolition woods. It provides the determination of the maximum projected length as well as parameters such as equivalent diameter. It also gives a characterisation of the filaments protruding from the SRF pieces.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 3310-1 *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-