



NSAI
Standards

Standard Recommendation
S.R. CEN/TS 16010:2013

Plastics - Recycled plastics - Sampling procedures for testing plastics waste and recyclates

S.R. CEN/TS 16010:2013

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:
CEN/TS 16010:2013

Published:
20 February, 2013

This document was published
under the authority of the NSAI
and comes into effect on:
20 February, 2013

ICS number:

13.030.50
83.080.01

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 13.030.50; 83.080.01

English Version

Plastics - Recycled plastics - Sampling procedures for testing plastics waste and recyclates

Plastiques - Plastiques recyclés - Procédures
d'échantillonnage pour l'essai des déchets de plastiques et
des recyclats

Kunststoffe - Kunststoff-Rezyklate - Probenahmeverfahren
zur Prüfung von Kunststoffabfall und Rezyklaten

This Technical Specification (CEN/TS) was approved by CEN on 22 October 2012 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, 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

Contents	Page
Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Symbols and abbreviations	7
5 Calculating the probability that a given set of samples is representative.....	7
6 Sampling from non homogeneous material streams.....	9
7 Procedures for the determination of material characteristics through sampling	10
Annex A (normative) Procedures for the determination of material characteristics through sampling	13
Annex B (informative) Principal development of standard deviation 's' as a function of number of samples 'n'	16
Annex C (informative) Development of factor 't' of the Student distribution for different levels of confidence	17
Bibliography	18

Foreword

This document (CEN/TS 16010:2013) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

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 Technical Specification is one part of a series of CEN publications on Plastics Recycling that is structured as follows:

- EN 15342, *Plastics — Recycled Plastics — Characterization of polystyrene (PS) recyclates*
- EN 15343, *Plastics — Recycled Plastics — Plastics recycling traceability and assessment of conformity and recycled content*
- EN 15344, *Plastics — Recycled Plastics — Characterisation of Polyethylene (PE) recyclates*
- EN 15345, *Plastics — Recycled Plastics — Characterisation of Polypropylene (PP) recyclates*
- EN 15346, *Plastics — Recycled plastics — Characterisation of poly(vinyl chloride) (PVC) recyclates*
- EN 15347, *Plastics — Recycled Plastics — Characterisation of plastics wastes*
- EN 15348, *Plastic — Recycled plastics — Characterization of poly(ethylene terephthalate) (PET) recyclates*
- CEN/TR 15353, *Plastics — Recycled plastics — Guidelines for the development of standards for recycled plastics*
- CEN/TS 16011, *Plastics — Recycled plastics — Sample preparation*

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, 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

Recycling of plastics waste is one type of material recovery process intended to save resources (virgin raw materials, water, energy), while minimising harmful emissions into air, water and soil as well as their impacts on human health. The environmental impact of recycling should be assessed over the whole life cycle of the recycling system (from the waste generation point to the disposal of final residues). To ensure that recycling constitutes the best environmental option for treating the available waste, some prerequisites should preferably be met:

- the recycling scheme being contemplated should generate lower environmental impacts than alternative recovery options;
- existing or potential market outlets should be identified that will secure a sustainable industrial recycling operation;
- the collection and sorting schemes should be properly designed to deliver recyclable plastics waste fractions fitting reasonably well with the available recycling technologies and with the (changing) needs of the identified market outlets, preferably at minimum costs for society.

This Technical Specification has been produced in accordance with the guidance produced by CEN on Environmental Aspects and in accordance with CEN/TR 15353, *Plastics — Recycled plastics — Guidelines for the development of standards for recycled plastics*.

NOTE CEN/TR 15353 considers the general environmental aspects which are specific to the recycling process.

This Technical Specification is intended to serve two purposes.

1. To provide a guide to plastic recyclers and others that enables a calculation to be made of the risk of inaccuracy presented by a chosen sampling regime. This will help to inform decisions about sampling that can also be influenced by factors such as the supply record of a supplier or the reliability of a process. This is covered in Clause 5.
2. To define the sampling procedures to be followed to characterise the material being sampled. These procedures may be followed where a particular level of accuracy is required, or where the sampling is in support of the resolution of a dispute. This is covered in Clause 7 and Annex A.

It is not the intention of this Technical Specification to develop new sampling methods.

1 Scope

This Technical Specification specifies a system for sampling procedures for testing plastics waste and recyclates which take into account the specifics of the plastics waste and recyclates. It is intended to cover all stages of the plastic recycling process.

The sampling procedures include the statistical specifics of the plastic waste and the behaviour of recyclates.

The sampling method should produce a representative testing sample. Differences can arise due to:

- the mixture of plastics;
- the origin (e.g. green dot in Germany, or electronic/automotive industry);
- the previous use of the plastic material;
- the residual contents (e.g. of containers);
- inert, residual or moisture content on or in the material.

This Technical Specification is without prejudice to any existing legislation.

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.

CEN/TR 15353:2007, *Plastics — Recycled plastics — Guidelines for the development of standards for recycled plastics*

CEN/TS 16011, *Plastics — Recycled plastics — Sample preparation*

EN ISO 472:2001, *Plastics — Vocabulary (ISO 472:1999)*

ISO 11648-1:2003, *Statistical aspects of sampling from bulk materials — Part 1: General principles*

ISO 11648-2:2001, *Statistical aspects of sampling from bulk materials — Part 2: Sampling of particulate materials*

3 Terms and definitions

For the purposes of this document, the terms, definitions and abbreviated terms given in EN ISO 472:2001, in CEN/TR 15353:2007 and the following apply.

NOTE The terms used are confined to the field of bulk sampling.

3.1

bulk material

amount of material within which component parts are not initially distinguishable on the macroscopic level

[SOURCE: ISO 11648-1:2003]

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
-