BRITISH STANDARD

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15343:2007

Plastics — Recycled Plastics — Plastics recycling traceability and assessment of conformity and recycled content

ICS 13.030.50; 83.080.20

National foreword

This British Standard is the UK implementation of EN 15343:2007.

The UK participation in its preparation was entrusted to Technical Committee PRI/89, Plastics recycling.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Plastics - Recycled Plastics - Plastics recycling traceability and assessment of conformity and recycled content

Plastiques - Plastiques recyclés - Traçabilité du recyclage des plastiques et évaluation de la conformité et de la teneur en produits recyclés

Kunststoffe - Kunststoff-Rezyklate - Rückverfolgbarkeit bei der Kunststoffverwertung und Bewertung der Konformität und des Rezyklatgehalts

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EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 15343:2007) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.

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 standard is one part of series of CEN publications on Plastics Recycling which 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 — Plastics recyclate characterisation of (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, Plastics — Recycled plastics — Characterization of poly(ethylene terephthalate) (PET) recyclates

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

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Introduction

Recycling of plastic waste is one type of material recovery process intended to save resources (virgin raw materials, water, and energy), while minimising harmful emissions into air, water and soil as well as any impacts on human health. The environmental impact of recycling has to 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 preferably should be met:

— 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;

— 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 standard 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.

Legislation, international standards or end users may require traceability of the constituent components of products in order to allow better product control or to locate and withdraw unwanted material and/or defective products from the market. The purpose of this standard is to describe the necessary procedures for mechanical recycling that are needed for products that have been manufactured completely or in part from recycled plastics and need proof of traceability. It will enable producers to use the recycled materials with confidence and it will provide the end users with a basis for their acceptance.

However it is often impossible to trace back each individual product at the end user stage and to check the use of the product through its life.

Consequently products are out of industrial control for a period of time. It is possible that during this period contamination with other materials may occur that could affect the product's suitability for recycling into the intended applications. In that case the recyclers have two options. Either their input control or sorting equipment guarantee that contaminants do not enter the recycling process or the recyclers must use a qualified process in which the pollution and/or mixed materials are removed to such levels that they do not affect the intended application for the recycled material.

In addition, during processing and use of the original product, chemical or structural changes in the material, may have occurred. In that case the recyclers can recycle into new materials with reduced properties, or they can try to repair the material damage, or they enhance the material properties by addition of virgin components or additives.

A recycling process should be designed such that contaminants or material damage that might have an influence on the intended application are removed or repaired to such an extent that they will not negatively influence the suitability of the recycled material for the intended application. If such contamination or damage cannot be removed or repaired during recycling, the purchase and/or

control of the incoming materials should guarantee that contaminated or damaged material does not enter the process in sufficient quantity to affect the properties of the recyclate.

Controls of the input material, of the recycling process and of the material produced are the prime instruments that determine the quality of recycled products.

If the origin of all the component parts of a product, virgin as well as recyclates, is known it is possible to calculate the recycled content of the product, a value which may be required by customers or regulators.

1 Scope

This European Standard specifies the procedures needed for the traceability of recycled plastics. This gives the basis for the calculation procedure for the recycled content of a product.

This standard is applicable without prejudice to any existing legislation.

NOTE The procedures are needed to formulate or describe the traceability, while the traceability can be used as a basis for calculating the recycled content

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 15342, *Plastics — Recycled plastics — Characterisation of polystyrene (PS) recyclates*

EN 15344, *Plastics — Recycled plastics — Characterisation of polyethylene (PE) recyclates*

EN 15345, *Plastics — Recycled plastics — Plastics recyclate characterisation of (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, *Plastics — Recycled plastics — Characterisation of poly(ethylene terephthalate) (PET) recyclates*

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

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

EN ISO 14021, *Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling) (ISO 14021:1999)*

ISO 17422, *Plastics — Environmental aspects — General guidelines for their inclusion in standards*

3 Terms, definitions and abbreviated terms

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

3.1
qualified recycling process
recycling process producing material which meets the requirements for the intended applications

3.2
challenge test
test of a recycling process in which purposely specified contaminants or damaged materials are introduced in prescribed quantities to judge the ability of the recycling process to produce material with certain specified properties

3.3
recycled content
percentage by weight of recycled material in a product

4 Methodology and procedures

4.1 Control of input material

The collection and sorting schemes shall 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.

Control of the input materials shall be carried out according to EN 15347.

Batch identification shall be required.

Collectors and sorters shall keep records on incoming and sorted products as set out in Table 1.

NOTE Waste plastics are collected in different ways depending on their origin. Household packaging can be collected via kerbside collection of specific fractions, by bring systems, where used products are deposited in containers by users, or by deposit systems. The collected waste is often concentrated at sorting centres where it can be sorted according to its colour, previous function or chemical composition. End of life products such as electronic equipment or vehicles are returned by the consumer to the supplier, then sent to specialised companies for dismantling and ultimate recovery of the plastics content. During demolition of civil constructions, plastics-containing parts are separated out and sent to specialised companies for further sorting. Production waste is collected from the producers and converters, often by dealers who may granulate or otherwise concentrate it.

4.2 Control of the recyclate production process

Control of the recycling process is required to guarantee proper functioning in line with good manufacturing practice. This will include:

— recording the process variables;

— quality control testing of the products delivered by the process;

— batch identification of the output.

For specific applications, challenge tests will be required to demonstrate that the process is capable of delivering products that meet the requirements of the application, for example food applications, automotive.

4.3 Plastics recyclate characterisation

In order that the purchaser of the recyclate may have confidence in the quality of the product, the supplier shall provide characteristics of the batch of recyclate following the relevant standard, e.g. EN 15342, EN 15344, EN 15345, EN 15346 or EN 15348.

4.4 Traceability

To ensure the necessary traceability according to the intended application, the supplier of the recyclate shall provide data for each stage described above (4.1, 4.2 and 4.3). See also Table 1. All procedures for the identification and the recording of the data shall be appropriately documented and recorded.

The purchaser shall ensure that the level of traceability is suitable for the intended application.

NOTE Since traceability of each individual item of waste is not realistic, and not necessary for qualified processes, the traceability should start from the sorting centers for household waste and end of life products. For industrial waste, traceability should start from the plastic producer or converter where the waste originates. The sorting centers and the recyclers should achieve traceability by giving each batch produced an identifier (e.g. serial number date code, batch code, transponder) unique to the source of operation. The appropriate identification should be maintained throughout the recycling process, during all stages of production and delivery. The preferred method of identification and administration will depend on the size of the recycling operation and the origin of the material and consequently is not specified in this standard. Once the material is delivered to the converter for production of the end products, the converter should handle information through their regular administrative procedures.

Table 1 —Information to be recorded as appropriate to the end use application

Origins	Material type/form
	Product type
	Type of waste e.g. pre-user, post user, demolition waste
	Where it came from (supplier identification)
	Date
	history of waste (e.g. known contact with hazardous substances)
Logistics	Collection (transporter/type of transport)
	Sorting
	Batch size, identification and marking
	Pre treatment (e.g. washing, grinding)
	Storage (e.g. outside)
Tests carried out before processing	EN 15347 Plastics recyclate characterisation of waste plastics
	Or as appropriate for the end use application
Process parameters	Details of the process used as appropriate
Tests carried out after processing	EN 15342
	EN 15344
	EN 15345
	EN 15346
	EN 15348
	Or any other standards as appropriate for the end use application
Intended [suitable] application	Details of appropriate or inappropriate applications
Other optional information as agreed between buyer and seller. NOTE This list is not exhaustive.	

5 Quality assurance

In order that the purchaser of the recyclate may have confidence in the quality of the product, the supplier should maintain records of the quality control carried out, including incoming materials, processes and finished materials or products.

NOTE A quality management system certified to EN ISO 9001 may be a suitable guarantee of consistent recyclate quality.

The specification and the standard deviation or range of values within and between batches of material should be agreed between the supplier and the purchaser.

Where a statement of recycled content, or the previous history of the material, is requested, documentary evidence shall be provided, where there is no analytical method available to supply such information. These records should be available to the purchaser upon request.

6 Recycled content

The recycled content of the product is calculated using the formula:

Percentage recycled content of the product =

mass of recycled materials in the product / total mass of the product $\times$ 100 (1)

Only pre-consumer and post-consumer materials shall count towards recycled content. Any claim concerning recycled content that implies an environmental benefit shall be supported by appropriate evidence. (See ISO 17422, EN ISO 14021).

Material that is recovered within the same manufacturing process that generated it, shall not count towards recycled content. (See also EN ISO 14021).

NOTE 1 At present there are no reliable technologies for an analytical determination of the recycled content in a material or product. Consequently the traceability information from both the recycled and the virgin materials will be needed to calculate the recycled content.

NOTE 2 For the purposes of this calculation, a recyclate or material containing recyclate is considered a product.

Bibliography

[1] EN ISO 9001:2000, *Quality management systems — Requirements (ISO 9001:2000)*

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