BS EN 13592:2017

BSI Standards Publication

Plastics sacks for household waste collection — Types, requirements and test methods

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Full document details: BS EN 13592:2017

National foreword

This British Standard is the UK implementation of EN 13592:2017. It supersedes BS EN 13592:2003 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PKW/0/-/10, Packaging - Plastics.

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

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Published by BSI Standards Limited 2017

ISBN 978 0 580 90575 9

ICS 55.080; 13.030.40

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2017.

Amendments/corrigendum issued since publication

Date	Text affected

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13592

February 2017

ICS 55.080

Supersedes EN 13592:2003+A1:2007

English Version

Plastics sacks for household waste collection - Types, requirements and test methods

Sacs en plastique pour la collecte des déchets ménagers - Types, exigences et méthodes d'essai

Kunststoffsäcke für die Abfallsammlung aus Haushalten - Typen, Anforderungen und Prüfverfahren

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Ref. No. EN 13592:2017 E

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European foreword

This document (EN 13592:2017) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by August 2017, and conflicting national standards shall be withdrawn at the latest by August 2017.

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

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1 Scope

This European Standard specifies the general characteristics, test methods and requirements for sacks, bags and bin liners, made from plastic films, used for household waste collection, or household selective waste collection including the collection of biodegradable waste for organic recycling (biodegradation and composting).

For the purpose of this European Standard biodegradable and compostable sacks, including ties if any, are those which comply with EN 13432.

This European Standard applies only to sacks, bags and bin liners for which the first use is for household waste collection or household selective waste collection.

This European Standard does not apply to sacks used to protect bins and that are not lifted at the emptying operation and thus do not require the same mechanical characteristics.

NOTE For editorial reasons, in this document the terms “sack” and “bag” are synonymous.

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 13432, *Packaging — Requirements for packaging recoverable through composting and biodegradation — Test scheme and evaluation criteria for the final acceptance of packaging*

EN 22248, *Packaging — Complete, filled transport packages — Vertical impact test by dropping (ISO 2248)*

EN ISO 291, *Plastics — Standard atmospheres for conditioning and testing (ISO 291)*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*

EN ISO 527-3, *Plastics — Determination of tensile properties — Part 3: Test conditions for films and sheets (ISO 527-3)*

EN ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics (ISO 1043-1)*

EN ISO 7965-2, *Sacks — Drop test — Part 2: Sacks made from thermoplastic flexible film (ISO 7965-2)*

ISO 4591:1992, *Plastics — Film and sheeting — Determination of average thickness of a sample, and average thickness and yield of a roll, by gravimetric techniques (gravimetric thickness)*

ISO 4593, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning*

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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
household waste
non dangerous waste from household or from industrial activities or service activities, collected in the same conditions

Note 1 to entry: To prevent damage to the sacks, unwrapped broken glass and unwrapped items with sharp edges are not normally placed in them.

3.2
selective waste collection
SWC
collection of some flows of waste, separated beforehand by producers with the view of valorisation or specific treatment

3.3
standard sack
open mouthed sack

3.4
drawtight sack
sack with a tie inserted in its top, allowing it to be closed and, in some cases, be carried

3.5
four flaps sack
sack with four flaps used for closure by knotting

3.6
strapsack
sack with two or four unsealed straps that can be used as tie for closure and as handles to carry it

3.7
T-shirt sack
sack with sealed handles

3.8
star sealed sack
sack folded before sealing in addition to gusset folds

3.9
gusset
fold or series of folds inserted in the longitudinal edge or in the bottom of a sack

3.10
tie
any item incorporated by design or added, used to close a sack

Note 1 to entry: For example: tapes, clips and wire ties.

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3.11
useful length
L
distance from the bottom to the mouth of a sack, measured inside the sack lying flat

Note 1 to entry: It is expressed in millimetres (mm).

3.12
useful width
P
internal width of a sack, measured with gussets unfolded, if any

Note 1 to entry: It is expressed in millimetres (mm).

3.13
nominal thickness
N_t
thickness of the film constituting a sack, as declared by the manufacturer or agreed upon in a contract

Note 1 to entry: It is expressed in micrometres (µm).

Note 2 to entry: nominal thickness is not the only parameter impacting the performance of the sacks

3.14
longitudinal direction
MD
direction parallel to the extrusion machine direction of the film

3.15
transverse direction
TD
direction perpendicular to the extrusion machine direction of the film

4 Designation

Sacks are designated using the following information:

a) use, i.e. household waste collection sacks, household waste selective collection sacks, specific test loads (if any) and, any other information if there is an agreement between the supplier and customer;

b) the dimensions, in millimetres (mm) (see Clause 5);

c) the type:
   1) standard sacks;
   2) drawtight sacks;
   3) T-shirt sacks;
   4) strap sacks;
   5) four flap sacks;
   6) star sealed sacks.

NOTE The above list of types of sacks is neither restrictive nor exhaustive.

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d) the abbreviated term of the plastic material from which the sack is made of, in accordance with EN ISO 1043-1, and the colour of the sack;

Colour is a basic information for the designation of a sack, e.g. black, blue, green, white. When no pigment, filler or coloured master batch is incorporated in the resin, it is designated as "neutral". When a more accurate definition of colour is needed, it should be specified in the contract with a reference to the relevant specification or standard.

e) the nominal thickness of the film, N_t, in micrometres (µm);

f) a reference to this European Standard, i.e. EN 13592;

g) a reference to EN 13432, for sacks for the separate collection of biodegradable waste for organic recycling (biodegradation and composting).

EXAMPLES OF DESIGNATION

EXAMPLE 1 Household waste collection sack, 700 mm x 1 100 mm, standard, in polyethylene, white, 40 µm thick:

"Household waste collection sack – EN 13592 — 700/1100 - Standard - PE - White – 40 µm"

EXAMPLE 2 Household selective waste collection drawtight sack, 600 mm x 800 mm, in polyethylene, neutral, 30 µm thick for specific load of 4 kg both for drop test and closing device test:

"Household selective waste collection sack for 4 kg – EN 13592 — 600/800 - Drawtight - PE - Neutral – 30 µm "

EXAMPLE 3 Organic waste collection with biodegradable and compostable sacks, 500 x 600 mm, standard, neutral 20 µm:

"Biodegradable and compostable sack EN 13592 — EN 13432 — 500/600 - Standard - Neutral – 20 µm"

5 Dimensions

The dimensions of the sacks shall be agreed between the supplier and the customer, unless otherwise specified in this standard.

The dimensions of sacks are given by two separate numbers, the first number giving the useful width, P, in millimetres, (see 3.12) and the second number the useful length, L, in millimetres (see 3.11).

EXAMPLE Reference 500x700 (500/700) for a sack with P = 500 mm and L = 700 mm.

6 General

Clause 7 gives the requirements for sacks for the collection of household waste except for the separate collection of biodegradable waste for organic recycling (biodegradation and composting) and the corresponding test methods.

In order to take into account the specificities of biodegradable waste and organic recycling, Clause 8 gives the requirements for sacks for the separate collection of biodegradable waste for organic recycling (biodegradation and composting). The corresponding test methods are given either in 7.2 when they are identical to those for sacks covered in Clause 7 or in 8.2 for the specific test methods or any deviation from the test methods given in 7.2.

Sampling shall be performed according to Annex B.

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7 Sacks for the collection of household waste, except for the separate collection of biodegradable waste for organic recycling

7.1 Requirements

7.1.1 Sampling

The number of sacks for each test is specified in Table B.1.

7.1.2 Useful width and useful length

The minimum useful width, measured on the sack, shall not be less than the minimum value:

P-2,5 % or P-10 mm

The minimum useful length, measured on the sack, shall not be less than the minimum value:

L-2,5 % or L-10 mm

No defective sacks shall be permitted out of 10 sacks when tested according to 7.2.2.2 and 7.2.2.3.

7.1.3 Film thickness

7.1.3.1 General

When tested according to 7.2.3, each sack shall satisfy the requirements for the individual values specified in 7.1.3.2 and for the average values specified in 7.1.3.3.

7.1.3.2 Individual values

No individual value of the film thickness measured in micrometres (µm) shall be less than:

$N_t - x$

where x is the minimum value of:

$\frac{15N_t}{25+N_t}$ or $0{,}35N_t$,

rounded to the nearest upper or lower unit, in micrometres (µm) (e.g. 1,4 as 1 µm; 1,5 as 2 µm; 1,6 as 2 µm)

7.1.3.3 Average values

The arithmetic average value of the film thickness, calculated according to either 7.2.3.2 or 7.2.3.3, shall be:

a) > N_t –5 %, when N_t > 20 µm;

b) > N_t –8 %, when $N_t \leq 20$ µm.

7.1.4 Opacity

7.1.4.1 General

Unless otherwise specified, the individual and average values of the opacity shall be in accordance with 7.1.4.2 and 7.1.4.3.

No defective sack shall be permitted out of 10 sacks (or strips) for individual values of each sack (or strip) and the average value of the 10 measurements when tested according to 7.2.4.1.

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In case of a specific agreement between the supplier and the customer, the opacity of household waste collection sacks may be checked by applying the method according to 7.2.4.2 and satisfying the criteria given 7.2.4.2.

7.1.4.2 Individual values

No individual value of the opacity shall be:

a) ≤ 55 % for household waste collection sacks;

b) ≥ 45 % for household selective waste collection sacks.

7.1.4.3 Average value

The arithmetic average value of the opacity calculated for 10 measurements shall be:

a) ≥ 60 % for household waste collection sacks;

b) ≤ 40 % for household selective waste collection sacks.

7.1.5 Resistance to leakage

No defective sack shall be permitted out of five sacks when tested according to 7.2.5.

7.1.6 Drop impact resistance

7.1.6.1 Sacks for household waste collection

No more than three defective sacks shall be permitted out of 20 sacks when tested according to 7.2.6.

If this requirement is not satisfied, then 10 additional sacks shall be tested according to 7.2.6 and in total no more than five defective sacks out of the 30 sacks shall be permitted.

7.1.6.2 Sacks for selective waste collection

Unless otherwise specified in an agreement between the supplier and the customer specifying different test loads, the test loads given in Table 2 shall be applied.

No more than three defective sacks shall be permitted out of 20 sacks when tested according to 7.2.6.

If this requirement is not satisfied, then 10 additional sacks shall be tested according to 7.2.6 and in total no more than five defective sacks out of the 30 sacks shall be permitted.

7.1.7 Resistance of the closing device

7.1.7.1 Tensile strength of ties

For sacks provided with an integrated or added tie, the tensile strength of the tie when measured according to 7.2.7.1 shall not be less than 40 N.

No more than one failure out of the 10 ties tested is permitted.

When the ties are not integrated to the sacks, the number of ties shall not be less than the number of sacks.

7.1.7.2 Resistance of the closing system of drawtight sacks

No more than two defective sacks out of 10 shall be permitted when tested according to 7.2.7.2.

For sacks for selective waste collection if there is an agreement between the supplier and the customer specifying different test loads (see 7.1.6.2), these agreed test loads shall be applied. In the absence of an agreement between the supplier and the customer, the test loads according to Table 3 shall be applied.

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7.2 Test methods

7.2.1 Atmosphere for conditioning and testing

Unless otherwise specified, the specimens shall be tested at room temperature, between 10 °C and 30 °C. The test temperature shall be recorded.

7.2.2 Dimensions

7.2.2.1 Apparatus

7.2.2.1.1 **Rule**, capable of measuring to an accuracy of 1 mm.

7.2.2.1.2 **Thickness measuring device**, as specified in ISO 4593 with an accuracy of 1 µm.

7.2.2.1.3 **Balance,** capable of measuring to an accuracy of 0,01 g.

7.2.2.2 Useful length

When the sack is laid flat, measure internally the useful length L along the two edges from the top (opening) of the sack to the bottom seam, or to the bottom of the sack for sacks without a bottom seam.

All the measured values, expressed in millimetres, shall be rounded to the nearest unit. Measured values of 0,5 shall be rounded up to the next greater 1 mm.

The useful length L is the arithmetic mean of the two measurements, expressed in millimetres (mm).

The useful length L of the different types of sacks is shown in Figure A.1.

Repeat the procedure for each sack.

7.2.2.3 Useful width

For sacks with gussets, cut the bottom seam and unfold the gussets.

When the sack is laid flat, measure the useful width P at mid-length between the top and the bottom of the sack.

In the case of sacks with edge seams, the useful width shall be measured between the inner sides of the seams.

The useful width P of the different types of sacks is shown in Figure A.1.

All the measured values, expressed in millimetres, shall be rounded to the nearest unit. Measured values of 0,5 shall be rounded up to the next greater 1 mm.

Repeat the procedure for each sack.

7.2.3 Film thickness

7.2.3.1 General

The film thickness shall be measured according to 7.2.3.2 (method using a thickness measuring device). If the arithmetic average value of the measurements of 10 strips is greater than 1,10xN_t, then the method according to 7.2.3.3 (gravimetric method) shall be applied to determine the average film thickness.

Individual film thicknesses shall be measured only by using a thickness measuring device.

All the measured values, expressed in micrometres, shall be rounded to the nearest unit. Measured values of 0,5 shall be rounded up to the next greater 1 µm.

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