



NSAI
Standards

Irish Standard
I.S. EN 17033:2018

Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods

© CEN 2018 No copying without NSAI permission except as permitted by copyright law.

I.S. EN 17033:2018

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/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 17033:2018

Published:

2018-01-24

This document was published under the authority of the NSAI and comes into effect on:

2018-02-12

ICS number:

83.140.10

NOTE: If blank see CEN/CENELEC cover page

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

National Foreword

I.S. EN 17033:2018 is the adopted Irish version of the European Document EN 17033:2018, Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 17033

January 2018

ICS 83.140.10

English Version

**Plastics - Biodegradable mulch films for use in agriculture
and horticulture - Requirements and test methods**

Plastiques - Films de paillage biodégradables
thermoplastiques pour utilisation en agriculture et
horticulture - Exigences et méthodes d'essai

Kunststoffe - Biologisch abbaubare Mulchfolien für den
Einsatz in Landwirtschaft und Gartenbau -
Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 13 November 2017.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 17033:2018 (E)

Contents

	Page
EUROPEAN FOREWORD	4
1 SCOPE.....	5
2 NORMATIVE REFERENCES.....	5
3 TERMS AND DEFINITIONS	6
3.1 DEFINITIONS RELATED TO FILMS	6
3.2 DEFINITIONS RELATED TO BIODEGRADATION AND DISINTEGRATION	7
3.3 DEFINITIONS RELATED TO TEST SOIL	8
3.4 DEFINITIONS RELATED TO ECOTOXICITY AND CONTROL OF CONSTITUENTS	9
4 GENERAL REQUIREMENTS	9
5 REQUIREMENTS FOR MATERIALS, TESTING SCHEMES AND EVALUATION CRITERIA FOR BIODEGRADATION AND ECOTOXICITY.....	9
5.1 CONTROL OF CONSTITUENTS	9
5.2 BIODEGRADATION.....	10
5.3 ECOTOXICITY.....	11
6 DIMENSIONAL, MECHANICAL AND OPTICAL PROPERTIES OF THE FILMS	14
6.1 REQUIREMENTS.....	14
6.2 APPEARANCE OF FILMS.....	15
6.3 TEST METHODS.....	15
7 DELIVERY CHECKING	17
8 FILM DESIGNATION	17
9 MARKING	17
9.1 MARKING OF THE FILM (OPTIONAL)	17
9.2 MARKING ON PACKAGING OR LABEL.....	18
10 TEST REPORT	18
11 FUNCTIONS AND SERVICE LIFE OF BIODEGRADABLE MULCH FILMS	18
12 CONDITIONS FOR INSTALLATION AND USE OF MULCH FILMS	18
ANNEX A (NORMATIVE) PREPARATION OF SOILS FOR ECOTOXICITY TESTING	19
A.1 GENERAL	19
A.2 PREPARATION OF THE SOIL	19
A.3 REACTORS	19
A.4 INITIAL TEST ITEM CONCENTRATION	19
A.5 TEST DURATION	20
ANNEX B (NORMATIVE) DETERMINATION OF ACUTE EFFECTS OF MATERIALS ON THE EMERGENCE AND GROWTH OF HIGHER PLANTS	21
B.1 GENERAL	21
B.2 PROCEDURE.....	21

B.3	EVALUATION OF THE RESULTS	22
ANNEX C (NORMATIVE) DETERMINATION OF ACUTE EFFECTS OF MATERIALS ON EARTHWORMS		23
C.1	GENERAL.....	23
C.2	PROCEDURE.....	23
C.3	EVALUATION OF THE RESULTS	23
ANNEX D (NORMATIVE) DETERMINATION OF EFFECTS OF MATERIALS ON REPRODUCTION OF EARTHWORMS		24
D.1	GENERAL.....	24
D.2	PROCEDURE.....	24
D.3	EVALUATION OF THE RESULTS	24
ANNEX E (NORMATIVE) DETERMINATION OF NITRIFICATION ACTIVITY OF SOIL MICROORGANISMS.....		25
E.1	GENERAL.....	25
E.2	PROCEDURE.....	25
E.3	EVALUATION OF THE RESULTS	25
ANNEX F (NORMATIVE) DETERMINATION OF RELATIVE LIGHT TRANSMISSION.....		26
F.1	PRINCIPLE	26
F.2	APPARATUS	26
F.3	PROCEDURE.....	26
F.4	EXPRESSION OF RESULTS	26
ANNEX G (INFORMATIVE) FUNCTIONS AND SERVICE LIFE OF BIODEGRADABLE MULCH FILMS.....		27
G.1	GENERAL.....	27
G.2	FACTORS OF DEGRADATION OF BIODEGRADABLE MULCH FILMS	27
G.3	MAIN FUNCTIONS OF BIODEGRADABLE MULCH FILMS.....	27
G.4	SERVICE LIFE ON SOIL OF BIODEGRADABLE MULCH FILMS.....	28
ANNEX H (INFORMATIVE) GOOD PRACTICE GUIDANCE FOR USE OF BIODEGRADABLE MULCH FILMS.....		31
H.1	WARNING	31
H.2	SOIL PREPARATION.....	31
H.3	FILM LAYING	31
H.4	FILM PERFORATION	31
H.5	CULTIVATION TECHNIQUES AND BIODEGRADABLE FILMS	32
H.6	FILM LIFETIME	33
H.7	TREATMENT OF FILMS AT THE END OF CULTIVATION	33
H.8	STORAGE	33
ANNEX I (INFORMATIVE) QUALITATIVE EVALUATION OF THE DISINTEGRATION IN A SLIDE FRAME TEST.....		35
BIBLIOGRAPHY		38

EN 17033:2018 (E)

European foreword

This document (EN 17033:2018) has been prepared by Technical Committee CEN/TC249 "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 July 2018, and conflicting national standards shall be withdrawn at the latest by July 2018.

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.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the requirements for biodegradable films, manufactured from thermoplastic materials, to be used for mulch applications in agriculture and horticulture.

This document is applicable to films intended to biodegrade in soil without creating any adverse impact on the environment.

It also specifies the test methods to assess these requirements as well as requirements for the packaging, identification and marking of films.

For information, it defines a classification of biodegradable mulch films according to their service life on soil and gives a good practice guide for the use of the films.

NOTE Films intended to be removed after use and not incorporated in the soil are not in the scope of this standard. They are in the scope of EN 13655 [1].

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 ISO 472, *Plastics - Vocabulary (ISO 472)*

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 7765-1:2004, *Plastics film and sheeting - Determination of impact resistance by the free-falling dart method - Part 1: Staircase methods (ISO 7765-1:1988)*

EN ISO 11268-1, *Soil quality - Effects of pollutants on earthworms - Part 1: Determination of acute toxicity to Eisenia fetida/Eisenia andrei (ISO 11268-1)*

EN ISO 11268-2, *Soil quality - Effects of pollutants on earthworms - Part 2: Determination of effects on reproduction of Eisenia fetida/Eisenia andrei (ISO 11268-2)*

EN ISO 11274, *Soil quality - Determination of the water-retention characteristic - Laboratory methods (ISO 11274)*

EN ISO 12846, *Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment (ISO 12846)*

EN ISO 17294-2, *Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of selected elements including uranium isotopes (ISO 17294-2)*

EN ISO 17556:2012, *Plastics - Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved (ISO 17556:2012)*

ISO 4591, *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 4592, *Plastics — Film and sheeting — Determination of length and width*



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