



Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

**ILNAS-EN 13206:2017+A1:2020**

## **Plastics - Thermoplastic covering films for use in agriculture and horticulture**

Kunststoffe - Thermoplastische  
Abdeckfolien für den Einsatz in der  
Landwirtschaft und im Gartenbau

Plastiques - Films de couverture  
thermoplastiques pour utilisation en  
agriculture et horticulture

**01/2020**



## National Foreword

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ILNAS-EN 13206:2017+A1:2020

EUROPEAN STANDARD **EN 13206:2017+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2020

ICS 65.040.30; 83.140.10

Supersedes EN 13206:2017

English Version

**Plastics - Thermoplastic covering films for use in  
agriculture and horticulture**

Plastiques - Films de couverture thermoplastiques  
pour utilisation en agriculture et horticulture

Kunststoffe - Thermoplastische Abdeckfolien für den  
Einsatz in der Landwirtschaft und im Gartenbau

This European Standard was approved by CEN on 14 November 2016 and includes Amendment 1 approved by CEN on 11 November 2019.

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

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

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## European foreword

This document (EN 13206:2017+A1:2020) 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of an identical text or by endorsement, at the latest by July 2020 and conflicting national standards shall be withdrawn at the latest by July 2020.

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.

This document includes Amendment 1 approved by CEN on 11 November 2019.

This document supersedes A1 EN 13206:2017 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

The following technical changes have been made in comparison to EN 13206:2001:

- a minimum thickness of the film is fixed;
- the test methods have been updated as appropriate;
- this revision specifies also test methods for the determination of the chlorine and sulfur contents of the films subjected to use and defines guidelines for installation, use and disposal;
- the classification for the durability of the covering films is extended to a further class.

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

## 1 Scope

This European Standard specifies the requirements related to dimensional, mechanical, optical and thermal characteristics of thermoplastic films used for covering permanent or temporary greenhouses and walking tunnels and low tunnels used for forcing and semi-forcing vegetable, fruit and flower crops.

Lay-flat perforated cover films are also in the scope of this European Standard.

It specifies a classification for the durability of covering films and the test methods referred to in this standard.

This European Standard specifies also test methods for the determination of the chlorine and sulfur contents of films subjected to use.

This European Standard is applicable to thermoplastic covering films used in agriculture and horticulture in Europe, in the thickness range 20 µm up to more than 250 µm, based on polyethylene and/or ethylene copolymers materials, of the following types: non-thermal films, thermal clear films and thermal diffusing films.

This European Standard also defines guidance for installation, use and disposal of covering films. It defines the conventional expected lifetime, as well as rules that allow evaluating the remaining use potential in the event of a failure before the normal end-of-use date.

**NOTE** These rules allow estimating the residual value of the films. These provisions only apply to the film itself and the damage it has undergone. Any other problem falls within the scope of professional practices and the general terms and conditions of sale.

## 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 10244-2, *Steel wire and wire products - Non-ferrous metallic coatings on steel wire - Part 2: Zinc or zinc alloy coatings*

EN 13031-1, *Greenhouses - Design and construction - Part 1: Commercial production greenhouses*

EN 16472, *Plastics - Method for artificial accelerated photoageing using medium pressure mercury vapour lamps*

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)*

☐<sub>A1</sub> EN ISO 4892-1, *Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance (ISO 4892-1)* ☐<sub>A1</sub>

EN ISO 4892-2:2013, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2:2013)*

EN ISO 4892-3:2016, *Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps (ISO 4892-3)*

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)*

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*

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

ASTM D 1003-13, *Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics*

### 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1

##### **width**

overall width of a film when laid flat

Note 1 to entry: It is expressed in millimetres.

#### 3.2

##### **nominal width**

width of a film, as declared by the manufacturer/supplier

Note 1 to entry: It is expressed in millimetres.

#### 3.3

##### **nominal thickness**

thickness of a film, as declared by the manufacturer/supplier

Note 1 to entry: It is expressed in micrometres ( $\mu\text{m}$ ).

#### 3.4

##### **roll length**

largest dimension of the film corresponding to the length of the unwinded roll

Note 1 to entry: It is expressed in metres.

#### 3.5

##### **nominal length**

length of a film roll or sheet, as declared by the manufacturer/supplier

Note 1 to entry: It is expressed in metres.

#### 3.6

##### **nominal mass**

mass of a roll or sheet, as declared by the manufacturer/supplier

Note 1 to entry: It is expressed in kilograms.

**3.7****longitudinal direction****MD**

direction parallel to the roll length, corresponding to the extrusion direction

**3.8****transverse direction****TD**

direction parallel to the width (at right angle to the length)

**3.9****conventional expected lifetime**

expected lifetime defined by agreement between the manufacturer/supplier and the customer or, by default, the minimum use duration that the film needs to satisfy

Note 1 to entry: It is expressed in years, months or seasons.

**3.10****actual useful lifetime**

time interval defined as beginning from the installation date of a film until its removal or an earlier date in case of its failure

Note 1 to entry: It is expressed in months, years or seasons.

**3.11****use ratio**

ratio of the actual useful lifetime of a film to its conventional expected lifetime

Note 1 to entry: It is expressed as a dimensionless ratio or as a percentage (%).

**3.12****remaining use potential**

difference between the conventional expected lifetime of a film and its actual useful lifetime

Note 1 to entry: It is expressed in months.

**3.13****radiant exposure*****H***

time integral of irradiance, measured in joules per square metre (J/m<sup>2</sup>)

[SOURCE: ISO 9370:2009, definition 3.27 [1]]

**4 Types and use**

The different types of covering films, their optical and thermal characteristics and use are given in Table 1.