



**SLOVENSKI STANDARD**  
**oSIST prEN 13207:2024**  
**01-oktober-2024**

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**Polimerni materiali - Termoplastične silažne folije in cevi za uporabo v kmetijstvu**

Plastics - Thermoplastic silage films and tubes for use in agriculture

Kunststoffe - Thermoplastische Silofolien und -schläuche für den Einsatz in der Landwirtschaft

Plastiques - Films d'ensilage thermoplastiques et gaines pour utilisation en agriculture

**Ta slovenski standard je istoveten z: prEN 13207**

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**ICS:**

65.040.20	Poslopja in naprave za predelavo in skladiščenje kmetijskih pridelkov	Buildings and installations for processing and storage of agricultural produce
83.140.10	Filmi in folije	Films and sheets

**oSIST prEN 13207:2024**

**en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 13207**

July 2024

ICS 83.140.10

Will supersede EN 13207:2018

English Version

## Plastics - Thermoplastic silage films and tubes for use in agriculture

Plastiques - Plastiques Films d'ensilage  
thermoplastiques et gaines pour utilisation en  
agriculture

Kunststoffe - Thermoplastische Silofolien und  
schläuche für den Einsatz in der Landwirtschaft

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 249.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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## European foreword

This document has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by SIS.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13207:2018.

prEN 13207:2024 includes the following significant technical changes with respect to EN 13207:2018:

- Clause 5 on materials has been added;
- Clauses 10, 11 and 12 on designation, marking and instructions for storage, installation and use of thermoplastic films and tubes, respectively, have been modified;
- Clause 13 on the design-for-recycling of end of life of thermoplastic films and tubes has been added;
- Clause 14 on removal and collection instructions of used thermoplastic films and tubes has been modified, referring to prEN 18109<sup>1</sup> for additional information;
- the informative Annex B on the guidance for use and disposal of thermoplastic films and tubes has been deleted.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

[oSIST prEN 13207:2024](https://standards.iteh.ai/catalog/standards/sist/9fd0870d-ade3-492e-ac89-bffe966830dc/osist-pren-13207-2024)

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<sup>1</sup> Under preparation

**prEN 13207:2024(E)****1 Scope**

This document specifies the requirements related to dimensional, mechanical, and optical characteristics of thermoplastic films and tubes used during the manufacture of silage and designed to last at least one year for protecting fodder.

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

This document is applicable to transparent, black, white or coloured (e.g. black/white) thermoplastic silage films based on polyethylene, ethylene copolymer, EVOH and polyamide.

These films are intended for covering bunker silos, silage tubes or silage clamps for preserving forage. They protect the forage and preserve it from rain and air. These films are not intended to cover bales piles (e.g. straw bales and hay bales).

Silage films obtained by sealing two or more films in machine direction are out of the scope of this document.

This document also defines installation, use and removal conditions of silage films. It defines the conventional useful 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 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 16472, *Plastics — Method for artificial accelerated photoageing using medium pressure mercury vapour lamps*

prEN 18109:2024, *Agricultural plastic products — Installation, use, removal, sorting, collection, preparation for recycling and design-for-recycling guidelines*

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

EN ISO 527-3:2018, *Plastics — Determination of tensile properties — Part 3: Test conditions for films and sheets (ISO 527-3:2018)*

EN ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance (ISO 4892-1)*

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 (4892-3:2016)*

EN ISO 7765-1:2024, *Plastics film and sheeting — Determination of impact resistance by the free-falling dart method — Part 1: Staircase methods (ISO 7765-1:2024)*

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

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

ISO 15105-2:2003, *Plastics — Film and sheeting — Determination of gas-transmission rate — Part 2: Equal-pressure method*

ISO 22095:2020, *Chain of custody — General terminology and models*

ISO/TR 19032, *Plastics — Use of polyethylene reference specimens (PERS) for monitoring laboratory and outdoor weathering conditions*

### 3 Terms and definitions

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

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

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

#### 3.1

##### **width**

overall width of the film when laid flat

Note 1 to entry: It is expressed in millimetres, *mm*.

#### 3.2

##### **nominal width**

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

Note 1 to entry: It is expressed in millimetres, *mm*.

#### 3.3

##### **nominal thickness**

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

Note 1 to entry: It is expressed in micrometres,  $\mu m$ .

#### 3.4

##### **roll length**

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

Note 1 to entry: It is expressed in metres, *m*.

#### 3.5

##### **nominal length**

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

Note 1 to entry: It is expressed in metres, *m*.

#### 3.6

##### **nominal mass**

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

Note 1 to entry: It is expressed in kilograms, *kg*.

**prEN 13207:2024(E)****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, minimum twelve months

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

**3.10****radiant exposure****H**

time integral of irradiance

Note 1 to entry: It is measured in joules per square metre ( $\text{J} \cdot \text{m}^{-2}$ ).

[SOURCE: ISO 9370:2017, 3.27]

**3.11****design for recycling**

design of product, including the related accessories, in order to ensure its recyclability under the current practices of removal, sorting, collection and recycling systems

Note 1 to entry: The purpose with the design for recycling criteria is to be able to use the recyclates back in the same product, independent of producer of material.

[SOURCE: prEN 18109]

**3.12****mechanical recycling**

processing of plastic waste into secondary raw materials or products without significantly changing the chemical structure of the material

Note 1 to entry: Plastics secondary raw material is a synonym of recyclate.

[SOURCE: EN ISO 472:2013, 2.1697, modified — Note 1 to entry changed; “plastics waste” changed to read “plastic waste”][3]

**3.13****post-consumer plastic**

plastic, generated by the end-users of products, that has fulfilled its intended purpose and can no longer be used for its intended purpose

Note 1 to entry: The term “post-use” is sometimes used synonymously

Note 2 to entry: Often abbreviated as PCR



[SOURCE: EN 17615:2022, 3.192, modified]

### 3.14

#### **pre-consumer plastic**

material diverted from the waste stream during a manufacturing process

Note 1 to entry: Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

### 3.15

#### **recycled content**

proportion, by mass, of recycled plastic in a product or packaging

Note 1 to entry: Only pre-consumer and post-consumer materials shall be considered as recycled content, consistent with the following usage of terms.

### 3.16

#### **controlled blending model**

chain of custody model in which materials or products with a set of specified characteristics are mixed according to certain criteria with materials or products without that set of characteristics resulting in a known proportion of the specified characteristics in the final output

Note 1 to entry: The adhered claim may refer to a certain percentage, at batch-level and /or site-level.

[SOURCE: ISO 22095:2020, 3.3.3]

### 3.17

#### **national collection scheme**

#### **NCS**

voluntary or mandatory national collection system of defined plastic fractions used in agriculture or horticulture applications

## 4 Types and use

The different types of silage films are given in Table 1.

**Table 1 — Types of films**

Type	Characteristics
SA	Film or tube with a nominal thickness $\geq 90 \mu\text{m}$ suitable for food contact
SB	Film or tube with a nominal thickness $\geq 100 \mu\text{m}$ not suitable for food contact
SC	Film with a nominal thickness $\geq 35 \mu\text{m}$ used as lining in combination with a type SA or SB silage film
SD-PA	Film or tube with a thickness $\geq 90 \mu\text{m}$ having at least one coextruded layer made from polyamide resins as gas barrier
SD-EVOH	Film or tube with a thickness $\geq 90 \mu\text{m}$ having at least one coextruded layer made from EVOH resins as gas barrier
SE-PA	Film with a nominal thickness $\geq 35 \mu\text{m}$

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Type	Characteristics
	having at least one coextruded layer made from polyamide as gas barrier used as lining in combination with a type SA or SB silage film
SE-EVOH	Film with a nominal thickness $\geq 35 \mu\text{m}$ having at least one coextruded layer made from EVOH as gas barrier used as lining in combination with a type SA or SB silage film

**5 Material**

Silage films in accordance with this document are usually manufactured from:

- low density polyethylene (PE-LD), linear low density polyethylene (PE-LLD) and their blends;
- ethylene vinyl acetate copolymers (EVAC) and their blends with PE-LD or PE-LLD;
- ethylene butyl acrylate copolymers (EBAK) and their blends with PE-LD or PE-LLD;
- gas barrier polymer, e.g. EVOH or polyamide.

The product shall be suitable for mechanical recycling as a PE fraction, according to the design for recycling defined in Clause 12.

Recycled content in the film shall be verified with ratio of post-consumer plastic recyclates and/or pre consumer plastic recyclates following a controlled blending model according to ISO 22095.

**6 Durability**

The durability of silage films is characterized by the class C0, C1 or C2. This classification, given in Table 2, is depending on the duration of exposure of the film to an artificial weathering using xenon-arc lamps according to 8.5, which induces a decrease of the value of tensile strain at break equal or less than 50 % of the initial value.

The class of durability shall be declared by the manufacturer/supplier.

**Table 2 — Resistance to weathering classification**

Class	Minimum duration of exposure h
C0 <sup>a</sup>	140
C1	1 400
C2	2 100
<sup>a</sup> For Type SC and SE film, only.	

For C1, corresponding to a duration of natural exposure of 12 months for a film used in a climatic zone  $\leq 130 \text{ kly/year}^2$ . For C2 corresponding to a duration of natural exposure of 12 months for a film used in a climatic zone between 131 kly/year and 160 kly/year and of 18 months for a film used in a climatic zone  $\leq 130 \text{ kly/year}^2$ .

Other light sources may be used provided that a correlation between the test results obtained with these light sources and these obtained after a natural exposure can be demonstrated. This may be

<sup>2</sup> 1 kly = 0,041 84 GJ/m<sup>2</sup>.