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Plastics - Thermoplastic stretch films for wrapping silage bales

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 10/25

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English Version

Plastics - Thermoplastic stretch films for wrapping silage bales

Plastiques - Films thermoplastiques étirables pour l'enrubannage de balles d'ensilage

Kunststoffe - Thermoplastische Stretchfolien zum Umwickeln von Silage-Ballen

This European Standard was approved by CEN on 16 June 2025.

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

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European foreword

This document (EN 14932:2025) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by January 2026, and conflicting national standards shall be withdrawn at the latest by January 2026.

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 supersedes EN 14932:2018.

EN 14932:2025 includes the following significant technical changes with respect to EN 14932:2018:

— Clause 4 on materials has been extended;

— Clauses 10, 11 and 12 on designation, marking and instructions for installation and use of silage stretch films, respectively, have been modified;

— Clause 13 on the design-for-recycling and end of life of stretch films for wrapping silage bales has been added;

— Clause 14 on removal and collection instructions of used silage stretch films has been modified, referring to EN 18109 for additional information;

— the informative Annex F on the determination of oxygen permeability and airtightness on an artificial bale, and the informative Annex H on guidance for use and disposal of stretch films, of the previous edition, have been deleted;

— the informative Annex G on the determination of adhesion characteristic has been modified to become normative Annex E on the determination of tightening force.

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.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

Introduction

The biological and practical requirements for silage stretch films and the interactions with the machinery, used for the wrapping and handling of round bales and square bales, have been considered for the design of this document. However, it is difficult to simulate in laboratory conditions some parameters like leak tightness, oxygen permeability, temperature and the manner they interact.

In order to obtain silage of high quality it is essential to reduce unwanted microbiological activities to very low levels. It is necessary to limit the penetration of oxygen of air inside the bale in order to create the best conditions for conservation. Consequently, the wrapped bale should be as gas tight as possible.

There are discussions regarding how the temperature inside the bale will influence how different types of “good” and “bad” microbiological activities will develop in forage. Although the film can be made of any colour, it is a fact that the pigmentation or colour itself will influence the temperature inside the bale, due to sun-radiation. Therefore, this document also includes a method for the determination of the solar reflectance of stretch films [1].

This document defines the criteria for design for recycling of silage stretch films.

End-of-life management is not covered in this document, as it is under the scope of EN 18109:2025 Clause 4 and 5.

1 Scope

This document specifies the requirements for dimensional, mechanical, oxygen transmission rate and optical characteristics of thermoplastic stretch films for wrapping bales used for ensiling of forage. It specifies a measurement for solar reflectance of the films.

This document specifies also test methods to check these requirements.

This document is applicable to white, black, or coloured films based on polyethylene materials. It covers the width range from 250 mm up to 1 500 mm.

The performances of the stretch films in conformance with this document are based on the use of at least six layers of films, pre-stretched at a ratio between 60 % and 70 % for round bales and a ratio of 55 % and 65 % for wrapping square bales.

This document also gives guidance for design for recycling.

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 18109:2025, *Plastics — 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 1133-1, *Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics - Part 1: Standard method (ISO 1133-1)*

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

EN ISO 6383-2, *Plastics - Film and sheeting - Determination of tear resistance - Part 2: Elmendorf method (ISO 6383-2)*

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

EN ISO 13468-2, *Plastics - Determination of the total luminous transmittance of transparent materials - Part 2: Double-beam instrument (ISO 13468-2)*

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

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

ISO 9845-1:2022, *Solar energy — Reference solar spectral irradiance at the ground at different receiving conditions — Part 1: Direct normal and hemispherical solar irradiance for air mass 1,5*

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

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