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| STN | **Plasty**<br>**Prieťažné fólie z termoplastov na obaľovanie silážnych balíkov** | **STN**<br>**EN 14932**<br><br>64 6020 |
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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.

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# EUROPEAN STANDARD
# NORME EUROPÉENNE
# EUROPÄISCHE NORM

**EN 14932**

January 2018

ICS 55.040; 83.140.10 Supersedes EN 14932:2006

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 20 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.

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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 14932:2018) 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of an identical text or by endorsement, at the latest by July 2018, and conflicting national standards shall be withdrawn at the latest by July 2018.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 not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14932:2006.

In comparison with the previous edition, the following technical modifications have been made:

— classification according to the solar reflectance is changed;

— durability makes reference to the exposure of films by artificial weathering;

— optional characteristics are introduced by revised annexes;

— paragraphs on instructions for use, for disposal and end-of-life of stretch films have been added.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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.

# 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 standard. 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.

This European Standard does not include as mandatory a test method for the determination of air tightness and oxygen permeability on artificial bale. Nevertheless, it is recommended for the manufacturers of stretch films to check this property near an appropriate testing laboratory.

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 standard also includes a method for the determination of the solar reflectance of stretch films [1].

# 1 Scope

This European Standard specifies the requirements for dimensional, mechanical, oxygen transmission rate and optical characteristics of stretch thermoplastic films for wrapping bales used for ensilaging of forage. It specifies a classification for solar reflectance of the films.

This European Standard specifies also test methods to check these requirements.

It specifies also test methods for the determination of the airtightness and oxygen permeability determined on a wrapped artificial bale.

This European Standard is applicable to white, black or coloured films based on polyolefin materials. It covers the width range from 250 mm up to 1 000 mm.

The performances of the stretch films in conformance with this European Standard 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 European Standard also gives guidance for storage of rolls and instructions for wrapping, storage of wrapped bales and for disposal of films.

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

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 9845-1:1992, *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*