INTERNATIONAL STANDARD

ISO 20299-2

Second edition
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Film for wrapping rubber bales —

Part 2: Natural rubber

Emballage des balles en caoutchouc —

Partie 2: Caoutchouc naturel

Reference number
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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This second edition cancels and replaces the first edition (ISO 20299-2:2006), which has been technically revised with the following changes:

— specification of the wrapping material and physical requirements of polyethylene film used for the packing of natural rubber bales comprising of either ribbed smoked sheets or block rubber; the scope has been updated accordingly;

— change of thickness and addition of specific gravity in 5.1;

— change of the maximum peak melting temperature in 5.2.3;

— addition of a new Clause 6 on marking.

A list of all parts in the ISO 20299 series can be found on the ISO website.

Introduction

Block natural rubber is prepared by comminuting large lumps, washed with plenty of water. It is then dried, baled and packed. The bales are wrapped in clear polyethylene film and packed into metal or wooden crates.

Bale coating on natural rubber ribbed smoked sheet bundles is to prevent stickiness between bales, fungus formation on the external sides and also to allow the stencilling of the grade mark and supplier code. The bale coating solution is a non-reinforcing filler which has no benefit in product manufacturing. Excess bale coating generate ash, which adversely affects the quality of end products and also creates environmental issues.

Shifting to polyethylene wrapping is an alternative option that is beneficial to all, as it is cost effective, environmental friendly, pollution free and healthy practice. However, because it is difficult and uneconomic to strip the film from each bale, an essential feature is that the film should disperse in the rubber compound during mixing. This means that its melting point has to be lower than the temperatures attained in internal mixing cycles, typically 120 °C to 160 °C.

Film for wrapping rubber bales —

Part 2:
Natural rubber

WARNING — Persons using this document should be familiar with normal laboratory practices. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

1 Scope

This document specifies the material and physical property requirements for non-strippable low density polyethylene film for wrapping natural rubber bales comprising of block natural rubber of 33,33 kg or 35 kg and natural rubber ribbed smoked sheets including bales of 33,33 kg, 35 kg, 50 kg and 111,11 kg, or any other bale weights as mutually agreed between the parties, and intended to keep the bales separate during transportation and storage.

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.

ISO 306:2013, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST)*

ISO 11357-3, *Plastics — Differential scanning calorimetry (DSC) — Part 3: Determination of temperature and enthalpy of melting and crystallization*

3 Terms and definitions

No terms and definitions are listed in this document.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Material

The film shall be manufactured from low-density polyethylene (PE-LD).

NOTE Slip agents, anti-oxidants and anti-blocking agents are normally not included.

5 Physical properties

5.1 Thickness and specific gravity

When measured using a micrometer screw gauge, the film shall have a thickness between 0,03 mm and 0,05 mm and specific gravity of 0,92 ± 0,01.

5.2 Thermal properties

5.2.1 General

It is sufficient to satisfy only one of the thermal property requirements.

5.2.2 Vicat softening temperature

When tested in accordance with method A50 of ISO 306:2013, the Vicat softening temperature shall be equal to or less than 95 °C.

NOTE The Vicat softening temperature is generally 18 °C lower than the peak melting temperature as measured by DSC.

5.2.3 Differential scanning calorimeter - peak melting temperature

When determined in accordance with ISO 11357-3, the differential scanning calorimeter - peak melting temperature shall be equal to or less than 113 °C.

6 Marking

Each bale shall be marked with the name of the manufacturer, near the splice area on the right side, using yellow colour letters with size 1 cm.

The name of the dealer should be written in the middle of the bale, on both sides, using red colour letters with size 5 cm.

The inclusion of the marking specification, including location on the bale, colour and size of the lettering, shall be as agreed upon between the interested parties.

7 Test report

The test report shall include the following:

a) a reference to this document;

b) all details necessary for the identification of the sample;

c) any unusual features noted during the determinations;

d) the results obtained from the tests specified in Clause 5;

e) the date of the testing.