SLOVENSKI STANDARD
kSIST-TP FprCEN/TR 17509:2020

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Materiali, pridobljeni iz izrabljenih avtomobilskih gum - Granulirana guma - Ugotavljanje deleža tekstilnih vlaken z vizualnim indeksom (kvalitativna metoda)

Materials obtained from End-of-Life Tyres - Granulated rubber - Determination of textile fiber content by visual index (qualitative method)

Materialien aus Altreifen - Gummigranulat - Bestimmung des Textilfasergehalts durch visuellen Index (qualitative Methode)

Ta slovenski standard je istoveten z: FprCEN/TR 17509

ICS:

83.160.01	Avtomobilske pnevmatike na splošno	Tyres in general

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TECHNICAL REPORT

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ICS

English Version

Materials obtained from End-of-Life Tyres - Granulated rubber - Determination of textile fiber content by visual index (qualitative method)

Materialien aus Altreifen - Gummigranulat - Bestimmung des Textilfasergehalts durch visuellen Index (qualitative Methode)

This draft Technical Report is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 366.

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

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European foreword

This document (FprCEN/TR 17509:2020) has been prepared by Technical Committee CEN/TC 366 “Materials obtained from End-of-Life Tyres (ELT)”, the secretariat of which is held by UNI.

This document is currently submitted to the Vote on TR.

Introduction

During the production of materials obtained from end-of-life tires (ELTs), maintenance of quality levels is based on the control of characteristics such as particle size distribution, steel and textile content. Particularly important is this last parameter. Its determination can be based on the method described in the EN 14243 series, but this test exhibits difficulties when the textile content is high and part of the fibres are bound to the rubber.

For this reason, for granulates there is a need to define an alternative approach capable of characterizing the content of textile fibres, free and bounded. This characterization is especially useful as a quick control that detects quality deviations during the production process and for the acceptance of the materials by consumers.

1 Scope

The purpose of this document is to provide information about a procedure based on the determination of a visual index correlated with the content of textile fibres, which are free and bounded to the rubber, of granulates. This approach is currently used by Spanish grinders in order to control the efficiency of their processes and is effective for granulates with particle sizes the bottom limit of which is more than 0,5 mm, and upper limit less than 10 mm.

NOTE Part of this document is also the presentation of a study carried by Valoriza Servicios Medioambientales and Geneus Canarias S.L.

A test procedure for the determination of a visual index of the content of the textile fibre of a granulate sample, which is free and bounded to the rubber, from the ELT's processing is described in UNE 53936:2015 *EX: Materials produced from end of life tyres. Rubber granulates.*

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 14243-1:2019, *Materials obtained from end of life tyres - Part 1: General definitions related to the methods for determining their dimension(s) and impurities*

3 Terms and definitions

For the purposes of this document, terms and definitions given in EN 14243-1:2019 and the following apply.

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

3.1
bounded textile
textile fraction on the granulated, that is bounded to the rubber and that cannot be separated without pulling rubber particles with it

3.2
visual index
conventional value, expressed in %, that correlates with the content of textile in a sample of granulate and is obtained through a mechanical device and the visual control of an operator

Note 1 to entry: 0 % index means absence of textile, 100 % a presence of textile in all the parts of the device of control.

4 Principle

The determination of textile fibres, which are free and bounded to the rubber, of an ELT sample of granulates, is based on the calculation of a visual index.

The underlying method is based on the recount of textile particles detectable to the naked eye in a sample distributed over the surface of a tray. To make the calculation easy, a grid template is placed over each sample.

The visual index is the ratio between the number of cells in which one textile is detected to the naked eye with respect to the total number of cells on the grid template.

5 Apparatus

5.1 Splitter or sample separator

The most used one is the riffle splitter: the sample separator shall contain at least 16 slots, located alternately so they send the material to two different subsamples. The width of the slots shall be at least three times the upper nominal size of the material to be divided in order to avoid the bridge effect.

5.2 Tray

Square or rectangular tray, rigid with flat surface and an area of (1 500 ± 50) cm^2, of any material, provided that it does not bound or interact with the rubber. See Figure 1.

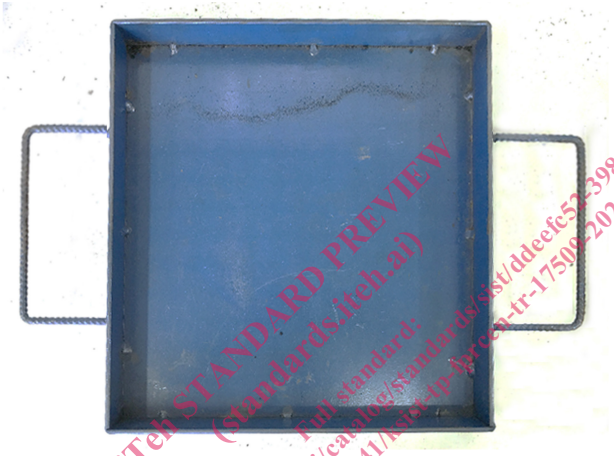

Figure 1 — Example of tray

A tray of 30 cm x 50 cm that matches with a 375 grids template is recommended.

5.3 Template

Square or rectangular template of geometry equivalent to the surface of the tray, divided on 2 cm x 2 cm cells and that do not prevent the proper visualization of the sample. See Figure 2.

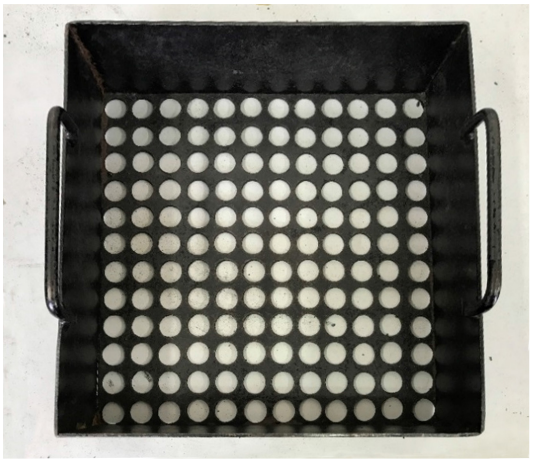

Figure 2 — Example of template

5.4 Scale

Scale capable of measuring the mass of the sample with an estimate within 0,1 g.

6 Preparation of sampling plan and laboratory sample

The base is a representative sample obtained from moving material in production or from storage material on a big-bag. The sample is divided with a splitter until obtaining a mass of 500 g ± 5 g.

7 Procedure

7.1 Sample spreading

The sample to test is placed on the tray and then the material is evenly distributed across its surface, see Figure 3.

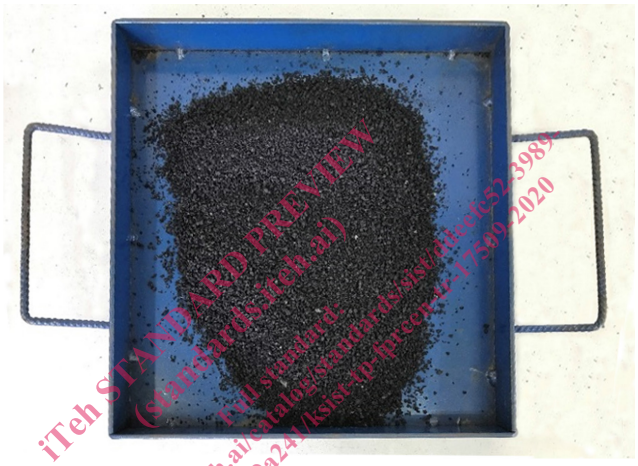

Figure 3 — Sample placed on the tray

To allow the various free and bound textile particles come to the surface, the tray shall be hit against the work surface five times, as illustrated in Figures 4 and 5.

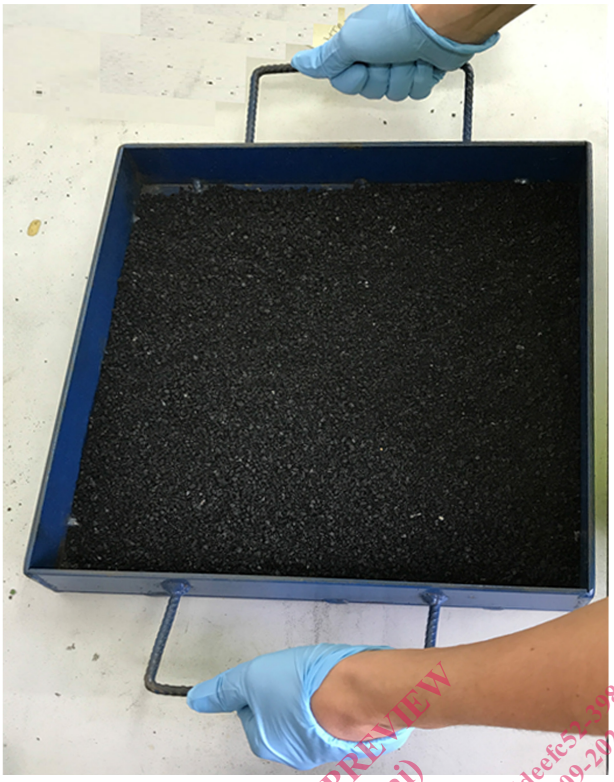

Figure 4 — Example of the hitting process

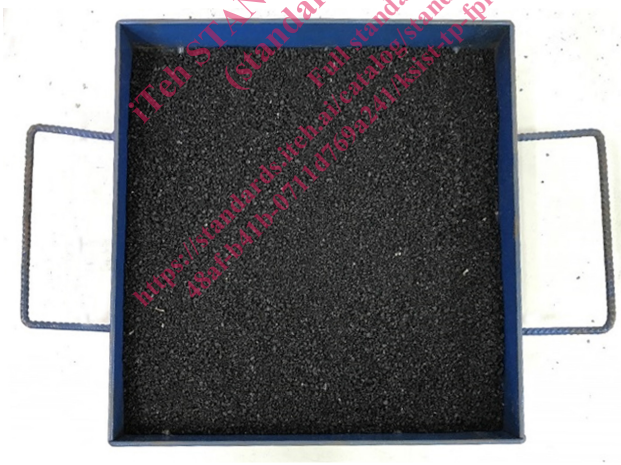

Figure 5 — Sample spreaded on the tray

Hereafter the template mentioned in 5.3 is placed on it, see Figure 6.