SLOVENSKI STANDARD
oSIST prEN 17308:2023

01-december-2023

Snov iz izrabljenih avtomobilskih gum - Jeklena žica - Ugotavljanje deleža nekovinskih materialov

Materials produced from end of life tyres - Steel wire - Determination of the non-metallic content

Aus Altreifen gewonnene Materialien - Stahldrähte - Bestimmung der nicht-metallischen Bestandteile

Matériaux obtenus à partir de pneus usagés non réutilisables (PUNR) - Fils métalliques - Détermination de la teneur en matériaux non métalliques

Ta slovenski standard je istoveten z: **prEN 17308**

ICS:

77.140.65	Jeklene žice, jeklene vrvi in verige	Steel wire, wire ropes and link chains
83.160.01	Avtomobilske pnevmatike na splošno	Tyres in general

oSIST prEN 17308:2023 **en,fr,de**

EUROPEAN STANDARD

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ICS 77.140.65; 83.160.01

Will supersede CEN/TS 17308:2019

English Version

Materials produced from end of life tyres - Steel wire - Determination of the non-metallic content

Aus Altreifen gewonnene Materialien - Stahldrähte - Bestimmung der nicht-metallischen Bestandteile

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

If this draft becomes a European Standard, 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.

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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
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 17308:2023) 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 CEN Enquiry.

1 Scope

This document provides two different methods for the quantitative estimation of non-metallic content remaining adhered to the steel wire obtained from the recovery of materials from end-of-life tyres.

The pyrolysis method is considered as the reference method while the hydrostatic method is considered as an *in situ* method.

This document includes sample collection and the preparation of representative samples based on a sampling plan for the purpose of their characterization.

This document does not cover the operational performance or fitness for use of the materials which are deemed to be a function of agreements between the manufacturer and the customer.

This document does not purport to address all the safety concerns, if any, associated with its use. This document does not establish appropriate safety and health practices and does not determine the applicability of regulatory limitations prior to its use.

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 (series), *Materials produced from end of life tyres*

3 Terms and definitions

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

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

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

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

3.1
sample
amount of material taken from a population and intended to provide information on the population

3.2
increment
portion of material extracted in a single operation of the sampling device

[SOURCE: ISO 13909:2009 (all parts) — The definition is adapted]

3.3
characteristic
property which helps to identify or differentiate items of a given population

[SOURCE: ISO 3534-1:2006]

Note 1 to entry: The characteristic may be either quantitative (by variables) or qualitative (by attributes).

3.4
lot
defined quantity of material for which a characteristic is to be determined

Note 1 to entry: In sampling standards, the lot is also designated as the stated size or volume that is considered appropriate for assessing the material. It follows that variations occurring in the material on any finer scale than this are deemed not to be of relevance.

3.5
combined sample
sample consisting of all the increments taken from a lot

Note 1 to entry: A combined sample is a quantity of material, representative of the lot for which the quality is to be determined.

3.6
field sample
sample taken in the field and from which laboratory samples are produced

3.7
laboratory sample
sample or sub-sample sent to or received by the laboratory

[SOURCE: IUPAC definition]

Note 1 to entry: When the laboratory sample has been prepared (reduced) by subdivision, mixing, or crushing, or by a combination of these processes, it becomes the test sample. A laboratory sample that requires no preparation can be used directly as the test sample. A test portion is removed from the test sample for testing or analysis purposes. The laboratory sample is the final sample from the point of view of sample collection, but it is the initial sample from the point of view of the laboratory.

Note 2 to entry: Several laboratory samples can be prepared and sent to different laboratories, or they can be sent to the same laboratory for different purposes. In the latter case, they are generally considered to be a single laboratory sample and documented as such.

3.8
test sample
sample prepared from the laboratory sample, from which the test portions are removed for testing or for analysis

[SOURCE: IUPAC definition]

3.9
population
totality of items, or total volume of material, to be investigated by sampling

Note 1 to entry: The population will generally be a convenient, well-defined subset of the overall population (e.g. a year's production of material) that is believed to be typical of that wider population.

3.10
representative sample
sample resulting from a sampling plan that can be expected to reflect adequately the properties of interest in the parent population

[SOURCE: IUPAC definition]

3.11
probabilistic sampling
sampling conducted according to the statistical principles of sampling

3.12
steel wire
result of processing end-of-life tyres by which steel wires are separated from textile and rubber fractions

4 Testing programme

When performing a testing programme for determining product characteristics, all the different measurement/testing steps are to be considered and specified by means of standards dealing each with one or several of those steps, thus securing the needed coherence and coordination between these different testing steps. The steps are:

a) sampling plan;

b) taking field sample(s);

c) storage of the sample(s), transport;

d) pre-treatment, e.g. drying (if needed);

e) quantification, analysis, calculations;

f) overall test report.

When undertaking some or all of these measurement steps, a testing laboratory shall operate with appropriate equipment and competent personnel so as to fulfill the applicable requirements specified in the present document. This includes calibration of equipment, e.g. calibration of scales.

5 Determination of non-metallic content in steel wire

5.1 General

Percentage of non-metallic content is a key measurement required for product classification of steel wire. Before being able to obtain an accurate value, a representative sample of the material to be tested shall be taken.

5.2 Preparation of sampling plan and laboratory sample

5.2.1 Principle of correct sampling

The main principle of sampling is to obtain a representative sample(s) from a lot of material from which a characteristic is to be determined. If the lot is to be represented by a sample, then every particle in the lot shall have an equal probability of being included in the sample (i.e. probabilistic sampling). These principles cannot be fully applied in practice with steel wire, so a different procedure is defined to ensure as much as possible the probabilistic sampling.

NOTE The objective of this procedure is to take samples in a way that is truly representative of the material produced. It is easier when the material is moving (for example on a conveyor belt). Therefore, sampling from moving material will be preferred whenever possible.

5.2.2 Sampling plan

A written sampling plan shall be prepared, before taking samples according to 5.2.4 to 5.2.8. The number of increments shall be not less than the minimum number of increments specified in 5.2.6.

A form for the sampling plan shall be prepared containing the following minimum information:

a) the name of the producer;

b) a unique identification number of the sample;

c) the name of the sampler;

d) the location(s), date and time of sampling;

e) the lot identification number which is to be tested (based on 5.2.3);

f) reference to this document;

g) any deviation from this document.

Once completed, this form becomes the sampling certificate.

5.2.3 Definition of lot size

The lot size shall be defined by the producer in accordance with requested specifications and is a fixed quantity for which a characteristic is determined. The lot size M_{lot} may be defined by the producer as:

a) a fixed quantity produced between machine settings;

b) a fixed quantity in a production day/shift;

c) a fixed quantity minimum of 10 t.

The lot size is based on production quality management decisions or specific customer requirements.

5.2.4 Sampling point and apparatus

Based on health and safety assessments and producer equipment, a fixed point for the collection of sample increments shall be chosen. Sampling shall be carried out using a sample box or other suitable equipment. The sampling box is passed through the stream of falling material so that it uniformly cuts the full flow of falling material. The box shall be large enough so that it does not become overloaded. Automatic systems fulfilling these criteria may also be used.

Sample increments shall be collected with the same frequency within the lot in order to represent the whole lot.

5.2.5 Size of a sample increment

Both criteria shall be fulfilled:

— mass of minimum increment: 0,5 kg;

— volume of minimum increment: 2 dm^3.

NOTE Mass and volume have been calculated according to existing experience.

5.2.6 Number of sample increments

The minimum number of increments depends on the size of the lot to be sampled:

$$n = 4 + 0{,}01 \times M_{\text{lot}}$$

where

n is the minimum permitted number of increments rounded off to the nearest whole number;