



SLOVENSKI STANDARD SIST-TS CEN/TS 17045:2020

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Nadomešča:

SIST-TS CEN/TS 17045:2017

Materiali, pridobljeni iz izrabljenih avtomobilskih gum - Kriteriji kakovosti za izbiro celih pnevmatik za predelavo in recikliranje

Materials obtained from end of life tyres - Quality criteria for the selection of whole tyres, for recovery and recycling processes

Materialien aus Altreifen - Qualitätskriterien für die Auswahl von ganzen Reifen für Verwertung und Recycling-Prozesse

Matériaux issus de pneumatiques en fin de vie - Critères qualitatifs de sélection de pneumatiques entiers pour des procédés de récupération et de recyclage

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TECHNICAL SPECIFICATION
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Supersedes CEN/TS 17045:2017

English Version

**Materials obtained from end-of-life tyres - Quality criteria
for the selection of whole tyres, for recovery and recycling
processes**

Matériaux issus de pneumatiques usagés non réutilisables - Critères qualitatifs de sélection de pneumatiques entiers pour des procédés de récupération et de recyclage

Materialien aus Altreifen - Qualitätskriterien für die Auswahl von ganzen Reifen für Verwertung und Recycling-Prozesse

This Technical Specification (CEN/TS) was approved by CEN on 24 August 2020 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (CEN/TS 17045:2020) 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.

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 CEN/TS 17045:2017.

The main change compared to the previous edition is the addition of subclause 5.2.5 New puncture prevention technologies.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: 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, Turkey and the United Kingdom.

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Introduction

The purpose of this document is to establish general and specific criteria for the use of whole end-of-life tyres in recycling processes and in material recovery and divide them into different applications, mainly in the field of civil engineering.

This document does not provide any criteria to select whole tyres to be reused in their original purpose, i.e. to be mounted on a vehicle. See Figure 1 for an overview of the whole process.

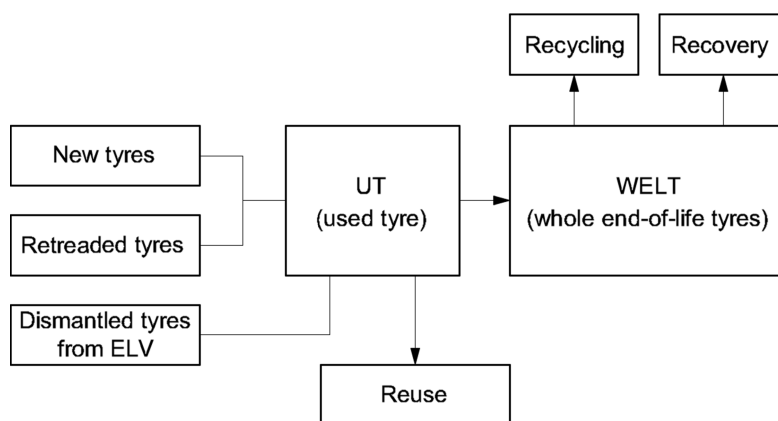


Figure 1 — General scheme of the generation process of end-of-life tyres and their final processing

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The criteria established in this document focus on determining the conditions under which a whole end-of-life tyre (WELT) can be used for materials recovery and recycling process.

From a legal point of view, in Europe, end-of-life tyres are considered as waste, listed in the European Waste Catalogue with code **16 01 03, end-of-life tyres**.

The criteria for establishing when ELTs cease to be waste could be drafted either by EU legislation, by the relevant Directives or by any member state.

The purpose of this document is to facilitate the decision making process for establishing the end of the waste status. This document also aims to overcome the limitations of using WELTs in certain applications and to clarify the conditions under which they can be intended for recycling or recovery processes in compliance with technical conditions, ensuring no negative impact to health and environment.

This document aims to increase consumer confidence in the applications of end-of-life tyres and facilitate the development of the market by the introduction of a specific set of parameters to ensure the quality and consistency of whole end-of-life tyres to be used for both recycling and recovery applications.

Compliance with the criteria set in this document results in the protection to the human health and the environment.

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

1 Scope

This document provides criteria for the sorting of whole end-of-life tyres (WELT) into different classes based on categories. It also provides criteria for the determination of their suitability to be used in recycling and material recovery processes.

The processes described in this document include sorting WELTs in order to determine their acceptance in recovery and recycling processes.

Criteria regarding the reuse of tyres to be mounted again in a vehicle are not addressed in this document.

This document does not cover the operational performance of the applications or the requirements of the materials for certain applications, which are usually agreed between the manufacturer and the customer.

Solid tyres are excluded from the scope of this document.

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 4223-1, *Definitions of some terms used in the tyre industry — Part 1: Pneumatic tyres*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 4223-1 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 <https://www.iso.org/obp>

3.1

aspect ratio

AA

number obtained by dividing the number expressing the nominal section height in mm by the number expressing the nominal section width in mm

3.2

bead

part of a tyre which is of such shape and structure as to fit the rim and hold the tyre on it

3.3

designated applications

collective term for the final use to which tyre-derived rubber material is put within the designated market sector

3.4

inner diameter

RR

dimension of the rim on which the tyre is mounted, usually expressed in inches

3.5

original shape

shape created by a revolution toroid, which maintains its shape in any position without any help

CEN/TS 17045:2020 (E)**3.6****processor**

operator undertaking end-of-life tyres shredding, crumbing or granulating processes

3.7**quality statement**

documentation accompanying each load or consignment of tyre derived rubber materials supplied

3.8**recovery of whole tyres**

use of tyres in applications other than the original intended purpose and excluding the energy recovery

Note 1 to entry: This definition applies only to this document and is not the general definition of recovery that can be found in other standards.

3.9**recycling process**

physical, mechanical or chemical process which converts collected and sorted WELTs into secondary (recycled) raw materials, or products, excluding energy recovery and the use of the product as a fuel

Note 1 to entry: See ISO 18604:2013.

3.10**reuse of tyres**

repeated deployment of used tyres in their original application

3.11**sidewall**

part of the tyre, excluding the tread, which is visible when the tyre, fitted to a rim, is viewed from the side

3.12**size reduction process**

process of cutting and/or shredding whole tyres using mechanical equipment

3.13**structure**

part of the pneumatic tyre where the reinforcement layers are located and for which the main purpose is supporting the tyre shape

3.14**tyre tread**

part of a pneumatic tyre that normally comes in contact with the ground

3.15**tyre width****WWW**

linear distance between the outsides of the sidewalls, usually expressed in mm

3.16**whole end-of-life tyre****WELT**

ELT that after selection is considered suitable to be recycled or used in its original shape for recovery purposes

4 General information on tyres

4.1 General

The information on tyres contained in this clause is not related with the recycling and recovery itself but aims to maintain homogenous criteria on this step in comparison with the general concepts and information related with new and in use tyres.

4.2 Categories of whole tyres

Different applications of the WELT can require a good behaviour under certain conditions, such as crush strength, shock absorption and vibration absorption to ensure the feasibility of the recovery process.

These properties will depend in many cases on the category of tyre which also determines its dimension. The categories of tyres are the following:

- scooter, motorcycle;
- passenger car;
- light trucks;
- truck and bus;
- industrial, agro and forestry.

In addition to these categories there are also solid tyres, which rather than a hollow structure, are completely filled with elastomeric material. These kinds of tyres have different physical characteristics, and are not covered by this document.

Recycling processes accept combination of different types of tyres in different proportions. In such a case, the category of tyres as refers in selection report should be addressed as mixed.

4.3 General composition of tyres

Each single tyre has its own specific chemical composition. Nevertheless, all tyres here considered will contain rubber, metal and textile fibres. The percentages of these materials typically depend on: size, type of tyre, intended use for the tyre and the manufacturer. The typical materials breakdown in percentages is shown in Table 1.

Table 1 — Average composition of different categories of tyres

Material	Passenger car average composition	Truck and bus average composition
Rubber	78 %	75 %
Metal	16,5 %	25 %
Textile	5,5 %	< 1 %