



# FINAL DRAFT International Standard

## ISO/FDIS 12046

### Synchronous belt drives — Automotive belts — Determination of physical properties

*Transmissions synchrones par courroies — Courroies pour la  
construction automobile — Détermination des caractéristiques  
physiques*

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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 document 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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 4, *Synchronous belt drives*.

This third edition cancels and replaces the second edition (ISO 12046:2012), which has been technically revised.

The main changes are as follows:

- [ISO/FDIS 12046](https://standards.iteh.ai/catalog/standards/iso/33753e97-28bc-41a7-81d1-6476025a8a81/iso-fdis-12046)  
<https://standards.iteh.ai/catalog/standards/iso/33753e97-28bc-41a7-81d1-6476025a8a81/iso-fdis-12046>  
— [Clause 2](#) has been updated;
- volumetric units have been clarified ( [7.9.2](#)).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Synchronous belt drives — Automotive belts — Determination of physical properties

## 1 Scope

This document specifies test methods for determining the physical properties of synchronous belts used in driving engine parts, such as camshafts, fuel injection pumps, balancing shafts. These test methods are intended to provide a means of characterizing synchronous belt properties for belts which are evaluated and qualified by dynamic laboratory and field testing.

## 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 48-2, *Rubber, vulcanized or thermoplastic — Determination of hardness — Part 2: Hardness between 10 IRHD and 100 IRHD*

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5288 apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

## 4 Principle

The objective of the test methods covered in this document is the evaluation of the physical properties of automotive synchronous belts through standardized testing. These test methods are independent of tooth profiles.

## 5 Test methods

The tests covered in this document are listed in [Table 1](#).

Table 1 — Tests

Test	Subclause
Hardness of rubber core	<a href="#">7.1</a>
Tensile strength	<a href="#">7.2</a>
Fabric adhesion	<a href="#">7.3</a>
Tension-cord adhesion	<a href="#">7.4</a>
Tooth shear	<a href="#">7.5</a>
Resistance to high temperature	<a href="#">7.6</a>
Resistance to low temperature	<a href="#">7.7</a>
Resistance to oil	<a href="#">7.8</a>
Resistance to ozone	<a href="#">7.9</a>
Resistance to water	<a href="#">7.10</a>

## 6 General conditions for testing

### 6.1 Standard environmental conditions

Standard conditions in the laboratory shall be maintained at a temperature of  $(25 \pm 5)$  °C, a relative humidity of  $(65 \pm 20)$  % and an atmospheric pressure of 86 kPa to 106 kPa. The test conditions should be recorded.

### 6.2 Standard conditions of test specimens

The test specimens shall be tested at least 16 h after vulcanization and shall be kept for at least 1 h prior to test in a room maintained under standard conditions.

### 6.3 Rounding off the test results

The results of each test shall be rounded off. Results shall be recorded according to the number of figures specified in [Table 2](#).

Table 2 — Rounding off of results

Test	Unit	Measured test value	Test results to be obtained
Hardness of rubber core	Shore A or IRHD	Integer	Integer
Tensile strength	N	Nearest 10	Nearest 100
Fabric adhesion	N	Integer	Integer
Tension-cord adhesion	N	Nearest 10	Nearest 10
Tooth shear	N	Nearest 10	Nearest 10
EXAMPLES	Nearest tens 3 474 → 3 470 3 475 → 3 480	Nearest hundreds 3 440 → 3 400 3 450 → 3 500	

### 6.4 Test report

For each test, the test report shall include the following information:

- number of teeth, pitch, tooth profile and width of specimen;
- constituent materials of specimen;
- production code of specimen;
- date of test;
- number of specimens;