
Dentistry — Coiled springs for use in orthodontics

*Médecine bucco-dentaire — Ressorts hélicoïdaux à usage
orthodontique*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 17254:2016](https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-a94bc4156d42/iso-17254-2016)

[https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-
a94bc4156d42/iso-17254-2016](https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-a94bc4156d42/iso-17254-2016)



iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 17254:2016

<https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-a94bc4156d42/iso-17254-2016>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Requirements	3
4.1 General.....	3
4.2 Dimensions.....	3
4.3 Mechanical properties.....	3
4.4 Hazardous elements.....	3
5 Test methods	3
5.1 Sampling.....	3
5.2 Dimensions.....	3
5.2.1 Apparatus.....	3
5.2.2 Measurement procedures.....	3
5.3 Mechanical properties.....	4
5.3.1 Apparatus.....	4
5.3.2 Measurement procedures.....	4
5.4 Treatment of results.....	4
6 Packaging and labelling information	4
6.1 General requirements.....	4
6.2 Packaging.....	4
6.3 Labelling.....	5
Bibliography	6

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 106, *Dentistry*, Subcommittee SC 1, *Filling and restorative materials*.

ISO 17254:2016

<https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-a94bc4156d42/iso-17254-2016>

Introduction

This International Standard has been developed to specify the information provided by manufacturers and suppliers to help clinicians compare coiled springs.

Specific qualitative and quantitative test methods for demonstrating freedom from unacceptable biological hazard are not included in this International Standard, but for the assessment of possible biological or toxicological hazards, reference can be made to ISO 10993-1 and ISO 7405.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 17254:2016](https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-a94bc4156d42/iso-17254-2016)

<https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-a94bc4156d42/iso-17254-2016>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 17254:2016

<https://standards.iteh.ai/catalog/standards/sist/462f50e2-4e73-4daa-b73c-a94bc4156d42/iso-17254-2016>

Dentistry — Coiled springs for use in orthodontics

1 Scope

This International Standard applies to coiled springs for use in orthodontic appliances.

This International Standard gives details of methods to compare the physical and mechanical properties of coiled springs, the test methods by which they can be determined, as well as packaging and labelling requirements.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1942, *Dentistry — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1942 and the following apply.

3.1

inner (internal spring) diameter

d_i

maximum outside diameter of a tube that could be contained within a coiled spring

Note 1 to entry: See [Figure 1](#).

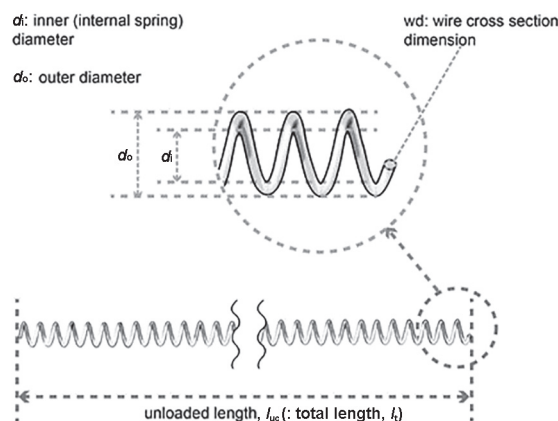


Figure 1 — Coiled Spring Dimensions

3.2

outer diameter

d_o

minimum inside diameter of a tube within which a coiled spring could be contained

Note 1 to entry: See [Figure 1](#).

3.3
wire cross section dimensions

w_d
cross section dimensions of the wire used to manufacture the spring

Note 1 to entry: See [Figure 1](#).

3.4
unloaded spring length

l_{uc}
<compression springs> overall length in the unloaded position

Note 1 to entry: See [Figure 1](#).

3.5
unloaded spring length

l_{ue}
<extension springs> maximum dimension including the hooks, eyelets or connection means in the unloaded position

Note 1 to entry: See [Figure 2](#).



Figure 2 — Coiled Springs Dimensions with Attachments.

3.6
total spring length

l_t
for springs with attachments, maximum dimension including the hooks, eyelets or connection means in the unloaded position.

3.7
maximum compression

c_{max}
percentage of the spring at complete compression against the unloaded spring length

3.8
maximum extension

ϵ_{max}
lengthening of the spring, in percent, required to produce a permanent deflection of 1 % of the unloaded spring length

3.9
spring load

$L_{80\%max}, L_{60\%max}, L_{40\%max}, L_{20\%max}$
force exerted by the spring on the return (unloading) cycle following loading to the specified maximum extension or compression at 80 %, 60 %, 40 %, 20 % of the maximum extension or compression

4 Requirements

4.1 General

The manufacturer shall declare the following properties, which when tested in accordance with the test methods described in [Clause 5](#), shall be within the ranges stated by the manufacturer.

4.2 Dimensions

4.2.1 The following dimensions shall be stated to the nearest 0,01 mm. When determined according to [Clause 5](#), the following dimensions of the product shall comply with the ranges stated by the manufacturer:

- a) inner diameter d_i
- b) outer diameter d_o
- c) unloaded spring length l_{uc} or l_{ue}
- d) total spring length l_t

4.3 Mechanical properties

4.3.1 Measure the elastic behaviour during unloading.

- a) maximum extension, ϵ_{max}
- b) maximum compression, c_{max}
- c) spring load, $L_{80\%max}$, $L_{60\%max}$, $L_{40\%max}$, and $L_{20\%max}$, of the maximum extension or compression

4.4 Hazardous elements

For the purposes of this International Standard, cadmium, beryllium, lead, and nickel are designated to be hazardous elements and the manufacturer shall state the concentrations as a mass fraction expressed as a percentage.

5 Test methods

5.1 Sampling

Six specimens of a single product from one batch shall be procured for each test.

Measurements shall be made on each dimension of each specimen.

5.2 Dimensions

5.2.1 Apparatus

Measurements shall be taken with calipers, micrometers, optical comparators, or other devices with an accuracy of 0,005 mm.

5.2.2 Measurement procedures

Measure the following to the nearest 0,01 mm: inner diameter, d_i , outer diameter, d_o , total length, l_t , and unloaded spring length, l_{uc} or l_{ue} , per their respective definitions.