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**Non-destructive testing — Radiation  
methods for computed tomography —**

**Part 1:  
Terminology**

*Essais non destructifs — Méthodes par rayonnements pour la  
tomographie informatisée —*

*Partie 1: Terminologie*

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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](mailto:copyright@iso.org)  
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## 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](http://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](http://www.iso.org/patents)).

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html)

This document was prepared by the European Committee for Standardization (CEN) (as EN 16016-1) and was adopted, under a special "fast-track procedure", by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 5, *Radiographic testing*, in parallel with its approval by the ISO member bodies.

The first edition (ISO 15708-1:2002) having been cancelled and replaced by ISO 15708-2:2017, this second edition of ISO 15708-1 has been repurposed with a different title and scope and takes into consideration developments in computed tomography (CT) and computational power over the preceding decade.

A list of all parts in the ISO 15708 series can be found on the ISO website.

# Non-destructive testing — Radiation methods for computed tomography —

## Part 1: Terminology

### 1 Scope

This document gives the definitions of terms used in the field of computed tomography (CT). It presents a terminology that is not only CT-specific but which also includes other more generic terms and definitions spanning imaging and radiography. Some of the definitions represent discussion points aimed at refocusing their terms in the specific context of computed tomography.

### 2 Normative references

There are no normative references in this document.

### 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 <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1

##### **absorption**

##### **photoelectric absorption**

mode of interaction between photons and matter whereby a photon is absorbed by an atom which then emits an electron whose kinetic energy is exactly equal to the energy-depleted photon's electron-binding energy

Note 1 to entry: See also *Compton scattering* (3.6).

#### 3.2

##### **angular increment**

angular spacing between adjacent *CT projections* (3.12)

#### 3.3

##### **artefact**

artificial feature which appears on the *CT image* (3.11) but does not correspond to a physical feature of the object

#### 3.4

##### **beam hardening**

##### **spectrum hardening**

spectral change of a polychromatic beam caused by preferential attenuation of lower energy photons

Note 1 to entry: See also *cupping effect* (3.17).

**3.5  
calibration template  
phantom**

known reference object that is scanned to assess the performance of a *CT system* (3.15)

**3.6  
Compton scattering**

mode of interaction between a photon and an electron, where the photon is scattered with reduced energy, and the difference of energy is transferred to the electron, also known as inelastic scattering or incoherent scattering

Note 1 to entry: See also *photoelectric absorption* (3.1).

**3.7  
computed tomography  
CT  
CT computed axial tomography**

radiographic scanning technique that uses a number of *CT projections* (3.12) of an object at different angles in order to allow calculation of a *CT image* (3.11)

**3.8  
CT cone beam**

scanning mode wherein each *CT projection* (3.12) is built from a set of *ray paths* (3.24) emanating from a point source and diverging in two dimensions, thereby forming a cone

**3.9  
CT data  
CT dataset**

*CT projection* (3.12) or *CT image* (3.11)

**3.10  
CT grey value  
grey level**

numerical value assigned to each *voxel* (3.30) in a *CT image* (3.11)

Note 1 to entry: This value represents the average *linear attenuation coefficient* (3.20) of the object volume for that voxel.

**3.11  
CT image  
tomogram**

2D or 3D image of the *CT grey values* (3.10) obtained by *reconstruction* (3.25)

**3.12  
CT projection**

1D or 2D radiographic image

**3.13  
CT scan**

set of relative movements between sample, source and detector, and the acquisition necessary to obtain a set of *CT projections* (3.12) that can be reconstructed into a *CT image* (3.11)

**3.14  
CT slice**

2D *CT image* (3.11) with a finite thickness along a given plane

Note 1 to entry: See also *slice thickness* (3.29).