

English Version

**Non-destructive testing - NDT training syllabuses (ISO/TS  
25107:2019)**

Essais non destructifs - Programmes de formation en  
END (ISO/TS 25107:2019)

Zerstörungsfreie Prüfung - Leitfaden für Ausbildungs-  
Syllabus der zerstörungsfreien Prüfung (ISO/TS  
25107:2019)

This Technical Specification (CEN/TS) was approved by CEN on 23 September 2019 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.

CEN members are the national standards bodies of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

Contents	Page
European foreword.....	3

## European foreword

This document (CEN ISO/TS 25107:2019) has been prepared by Technical Committee ISO/TC 135 "Non-destructive testing" in collaboration with Technical Committee CEN/TC 138 "Non-destructive testing" the secretariat of which is held by AFNOR.

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 ISO/TR 25107:2006.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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.

## Endorsement notice

The text of ISO/TS 25107:2019 has been approved by CEN as CEN ISO/TS 25107:2019 without any modification.

# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 General</b> .....	<b>1</b>
4.1 NDT training.....	1
4.2 Levels of competence .....	2
4.3 General environmental and safety considerations .....	3
<b>5 Radiographic testing (RT) — Levels 1, 2 and 3</b> .....	<b>3</b>
<b>6 Ultrasonic testing (UT) — Levels 1, 2 and 3</b> .....	<b>16</b>
<b>7 Eddy current testing (ET) — Levels 1, 2 and 3</b> .....	<b>22</b>
<b>8 Penetrant testing (PT) — Levels 1, 2 and 3</b> .....	<b>29</b>
<b>9 Magnetic particle testing (MT) — Levels 1, 2 and 3</b> .....	<b>35</b>
<b>10 Leak testing (LT) — Levels 1, 2 and 3</b> .....	<b>42</b>
<b>11 Acoustic emission testing (AT) — Levels 1, 2 and 3</b> .....	<b>54</b>
<b>12 Visual testing (VT) — Levels 1, 2 and 3</b> .....	<b>62</b>
<b>13 Thermographic testing (TT) — Levels 1, 2 and 3</b> .....	<b>70</b>
<b>14 Strain gauge testing (ST) — Levels 1, 2 and 3</b> .....	<b>79</b>
<b>15 Developing techniques</b> .....	<b>83</b>
<b>Annex A (informative) Alternative training hours for advanced radiographic techniques</b> .....	<b>94</b>
<b>Annex B (informative) Useful references</b> .....	<b>96</b>

## 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)).

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

For an explanation of the voluntary nature of standards, 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 7, *Personnel qualification*.

This first edition cancels and replaces ISO/TR 25107:2006.

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).

## Introduction

The body of technical knowledge required of non-destructive testing (NDT) personnel is essential for the development of deliverables concerning NDT methods. No deliverables can be developed appropriately for NDT methods, without sufficient information on the technical background knowledge of the personnel who utilize the methods.

### Role of NDT

Non-destructive testing makes an important contribution to the safety, economic and ecological welfare of our society.

NDT is the only choice for the testing of an object which cannot be destroyed, modified or degraded by the testing process. This is generally required for objects which are to be used after testing, for example, safety parts, pipelines, power plants, and also constructions under in-service inspection, but even for unique parts in archaeology and culture.

NDT is based on physical effects at the surface or the inner structure of the object under test. Often, the outcome of the test needs to be interpreted to give a useful result; sometimes different NDT methods are combined or verified by other test methods.

### NDT personnel and professional ethics

NDT personnel have a great responsibility, not only with respect to their employers or contractors but also under the rules of good workmanship. The NDT personnel is independent and free from economic influences with regard to his/her test results, otherwise the results are compromised. The NDT personnel is aware of the importance of his/her signature and the consequences of incorrect test results for safety, health and environment.

Finally, the NDT personnel is responsible for all interpretations of test results carrying his/her signature and he/she never signs test reports beyond his/her certification.

[Annex B](#) provides standards numbers that can be of interest for the application of the provisions laid out in this document.



# Non-destructive testing — NDT training syllabuses

## 1 Scope

This document gives requirements and recommendations for non-destructive testing (NDT) training syllabuses, with the intention of harmonizing and maintaining the general standard of training of NDT personnel for industrial needs.

It also establishes the minimum requirements for effective structured training of NDT personnel to ensure eligibility for qualification examinations leading to third-party certification according to recognized standards. In addition to non-destructive testing in general, its guidelines for syllabuses cover acoustic emission testing, eddy current testing, leak testing, magnetic testing, penetrant testing, radiographic testing, ultrasonic testing, visual testing, thermographic testing, and strain gauge testing.

ISO/TS 25108 gives requirements and recommendations for NDT training organizations.

## 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 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

## 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:

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

### 3.1

#### adjustment

set of operations carried out on a measuring system so that it provides prescribed indications corresponding to given values of a quantity to be measured

Note 1 to entry: Types of adjustment of a measuring system include zero adjustment, offset adjustment, and span adjustment (sometimes called gain adjustment).

## 4 General

### 4.1 NDT training

Training syllabuses by themselves cannot guarantee competence of the trainees to provide adequate technical knowledge, since it is quite common that some students achieve excellent results whereas others fail in the same class. ISO 9712 provides the minimum training requirements for candidates who possess adequate skills and prior knowledge. If it is not the case, consideration for additional training should include:

- a) level 1, 2 and 3 — mathematics;