

INTERNATIONAL STANDARD

ISO
3443-8

First edition
1989-07-01

Tolerances for building —

Part 8 :

**Dimensional inspection and control of construction
work**

Tolérances pour le bâtiment —

*Partie 8 : Vérification dimensionnelle et contrôle dimensionnel des travaux de
construction*



Reference number
ISO 3443-8 : 1989 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3443-8 was prepared by Technical Committee ISO/TC 59, *Building construction*.

ISO 3443 consists of the followings parts, under the general title *Tolerances for building*:

- *Part 1: Basic principles for evaluation and specification*
- *Part 2: Statistical basis for predicting fit between components having a normal distribution of sizes*
- *Part 3: Procedures for selecting target size and predicting fit*
- *Part 4: Method for predicting deviations of assemblies and for allocation of tolerances*
- *Part 5: Series of values to be used for specification of tolerances*
- *Part 6: General principles for approval criteria, control of conformity with dimensional tolerance specifications and statistical control — Method 1*
- *Part 7: General principles for approval criteria, control of conformity with dimensional tolerance specifications and statistical control — Method 2 (Statistical control method)*
- *Part 8: Dimensional inspection and control of construction work*

Annexes A and B of this part of ISO 3443 are for information only.

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Case postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Tolerances for building —

Part 8 :

Dimensional inspection and control of construction work

1 Scope

This part of ISO 3443 gives the procedures to be understood and a list of items to be agreed upon by all parties in a building project. It applies to dimensional quality control procedures and requirements, to be used for construction work.

Annex A contains a list of recommendations to be used where applicable.

2 Requirements

Before the start of erection work the following should be agreed upon and observed by the parties concerned :

- a) objects and their characteristics which should be checked, and reference to tolerance specifications;

- b) the stages of construction at which control shall take place;

- c) the parties responsible for the control;

- d) sampling plans and reference to measurement methods;

- e) procedures and consequences in case of non-compliance;

- f) definition of starting and terminating time of control;

- g) documentation of inspection.

Annex A (informative)

Recommendations

This annex contains a list of recommendations based on clause 2 that are to be used where applicable.

A.1 Objects and characteristics which it is important to check

Among others, the following important objects and their characteristics should be checked :

- a) primary, secondary and position points, and possible transfer and protection points, horizontally and vertically, checked according to ISO 4463;
- b) the dimensions and level of the foundation;
- c) the dimensions of the components of prefabricated structures delivered to the building site;
- d) co-axiality or a position of the bottom of a component;
- e) verticality, especially of staircase wells and lift shafts;
- f) joint clearances between components;
- g) dimensions of supporting areas of components;
- h) horizontality of component surfaces and the floor slabs of the building;
- i) coincidence of surfaces;
- j) the shape of surfaces and profiles.

A.2 Stages of construction to be checked

Without excluding other points in time, control should preferably take place :

- a) at the delivery of components on the site and before erection;
- b) at important stages, for example at the finished erection of each storey;
- c) at the completion of an enterprise.

A.3 Parties responsible

The parties responsible are normally the main contractor or subcontractor or persons appointed by them.

In the process of construction the following types of control may be carried out¹⁾:

- a) receiving inspection²⁾;
- b) site checking;
- c) acceptance inspection²⁾.

The responsibility for carrying out these types of control is subject to agreement. Separate types of control may be combined, if necessary.

A.4 Sampling plans and reference to measurement methods

Characteristics which are of significant importance for the functioning of the building (safety, assembly, economy, etc.) are inspected by taking samples or by using 100 % inspection (see ISO 3443-6 and ISO 3443-7). Setting-out is inspected using the methods in ISO 4463-1.

Dimensions and shape of the building or components should be inspected using the methods in ISO 7976-1. If the position of measuring points has not been specified, the positions can be selected in accordance with ISO 7976-2.

The measurement accuracy should be agreed upon by the parties concerned.

The designer points out the characteristics which are of critical importance for the functioning of the building and indicates special control plans for these characteristics.

A.5 Procedures and consequences in case of non-compliance

Deviations from specified accuracy requirements should be reported to the responsible person who is nominated by agreement, to judge the action to be taken when deviations exceed the specified accuracy requirements.

Questions of compensation should be covered by the agreement.

A.6 Definition of starting and terminating time of control

The period of control should be stated in the agreement. It may cover the time of construction and/or the time of guarantee.

1) In addition to the inspections on the building site mentioned below, off-site inspection of components may be desirable.

2) Terms in accordance with ISO 3534.

A.7 Documentation of inspection

Documentation on the site should be maintained suitably, using a field book and data files, which should be available in a readable form.

It should contain, among others items of information :

- a) the object;
- b) measured values and possible calculations with analyses;
- c) date and time of inspection;
- d) place of inspection;
- e) observer's name;
- f) equipment used, production number, calibration certificates, measuring accuracy;
- g) instrument checks carried out;
- h) position of measuring points (new points);
- i) reference points used;
- j) temperature and other atmospheric conditions;
- k) other possible influence factors, for example the age of the components.

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Annex B (informative)

Bibliography

ISO 3534 : 1977, *Statistics — Vocabulary and symbols*.

ISO 4463-1 : 1989, *Measurement methods for building — Setting-out and measurement — Part 1 : Planning and organization, measuring procedures, acceptance criteria*.

ISO 7976-1 : 1989, *Tolerances for building — Methods of measurement of buildings and building products — Part 1 : Methods, instruments and accuracy*.

ISO 7976-2 : 1989, *Tolerances for building — Methods of measurement of buildings and building products — Part 2 : Position of measuring points*.

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