INTERNATIONAL STANDARD

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Buildings and constructed assets — Service life planning —

Part 2: Service life prediction procedures

Bâtiments et biens immobiliers construits — Prévision de la durée de vie —

Partie 2: Procédures pour la prévision de la durée de vie

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 15686 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15686-2 was prepared by Technical Committee ISO/TC 59, *Building construction*, Subcommittee SC 14, *Design life*.

ISO 15686 consists of the following parts, under the general title *Buildings and constructed assets — Service life planning*:

— *Part 1: General principles*

— *Part 2: Service life prediction procedures*

— *Part 3: Performance audits and reviews*

— *Part 4: Data requirements*

— *Part 5: Life cycle costing*

— *Part 6: Life cycle assessment*

Annex A of this part of ISO 15686 is for information only.

Introduction

The ISO 15686 series on “Buildings and constructed assets — Service life planning” is an essential contribution to the development of a policy for design life. A major impetus for the preparation of the ISO 15686 series is the current concern over the industry’s inability to predict costs of ownership and maintenance of buildings. A secondary objective of service life planning is to reduce the likelihood of obsolescence and/or to maximize the reuse value of the obsolete building components.

The purpose of this part of ISO 15686 is to describe the principles for service life predictions (SLPs) of building components, considering various service environments. The SLP methodology is developed to be generic, i.e. applicable to all types of building components, and is meant to serve as a guide to all kinds of prediction processes. The methodology may be used in the planning of SLP studies regarding new and innovative components of which the knowledge of their performance is limited, or be the guiding document in the assessment of already performed investigations in order to appraise their value as knowledge bases for SLP and reveal where complimentary studies are necessary.

This part of ISO 15686 is intended primarily for

— manufacturers who may wish to provide data on performance in use of their products,

— test houses, technical approval organizations, etc., and

— those who develop or draft product standards.

While this part of ISO 15686 could be used as a stand-alone document, for an improved understanding of its context it is recommended to read the other parts of ISO 15686, in particular ISO 15686-1, which is the umbrella document of the ISO 15686 series.

Data obtained in accordance with the methodology described in this part of ISO 15686 can be used in any context where appropriate, and specifically to obtain a forecast service life for a specific object via the factor method (or directly), as described in ISO 15686-1. The factor method aims to find an estimated service life of a component (ESLC) in the specific planning case, taking all case-specific conditions affecting the service life into consideration. Accordingly, this part of ISO 15686 interfaces with ISO 15686-1 as a crucial means of attaining the knowledge necessary for the service life planning process as described in ISO 15686-1.

This part of ISO 15686 will also interface with ISO 15686-4, which will specify in detail the way SLP data are formatted, stored and presented.

The SLP methodology does not cover estimation of service life limited by obsolescence or other non-measurable or unpredictable performance states. The methodology also does not cover prediction of the economic service life, but will yield data needed as input for such evaluations.

Predictions can be based on evidence from previous use, on comparisons with the known service life of similar components, on tests of degradation in specific conditions or on a combination of these. Ideally a prediction will be given in terms of the service life as a function of the in-use condition. In any case, the dependence of the service life on the in-use condition will be quantified in a suitable way. The reliability of the predicted service life of a component (PSLC) will depend on the evidence it is based on.

The methods described in the ISO 15686 series are based on work carried out in many countries. In general terms they are a development of the current standards on durability published by the Architectural Institute of Japan, the British Standards Institution and the Canadian Standards Authority. Specifically, this part of ISO 15686 is an extension and modification of the RILEM recommendation 64, "Systematic Methodology for Service Life Prediction", developed by RILEM[1)] TC 71-PSL and TC 100-TSL working jointly with CIB[2)] W80.

1) The International Union of Testing and Research Laboratories for Materials and Structures.

2) International Council for Building Research, Studies and Documentation.

Buildings and constructed assets — Service life planning —

Part 2:
Service life prediction procedures

1 Scope

This part of ISO 15686 describes procedures that facilitate service life predictions of building components. It provides a general framework, principles and requirements for conducting and reporting such studies. This part of ISO 15686 does not describe the techniques of service life prediction of building components in detail.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 15686. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 15686 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6241:1984, *Performance standards in building — Principles for their preparation and factors to be considered*.

ISO 6707-1:1989, *Building and civil engineering — Vocabulary — Part 1: General terms.*

ISO 15686-1:2000, *Buildings and constructed assets — Service life planning — Part 1: General principles.*

3 Terms and definitions

For the purposes of this part of ISO 15686, the terms and definitions given in ISO 6707-1 and ISO 15686-1 and the following apply. The terms are ordered by concepts for the assistance of users of this part of ISO 15686.

3.1 Service life and performance

3.1.1
ageing
degradation due to long-term influence of agents related to use

3.1.2
degradation indicator
deficiency which shows when a performance characteristic fails to meet a requirement

EXAMPLE When gloss is a performance characteristic, gloss loss is the corresponding degradation indicator. When mass (or thickness) is a performance characteristic, mass loss is the corresponding degradation indicator.