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**Diagnosing moisture damage in buildings and implementing countermeasures**

**Part 2:  
Assessment of conditions**

iTeh Standards  
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## Foreword

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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 document 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)).

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This document was prepared by Technical Committee ISO/TC 205, *Building environment design*.

A list of all parts in the ISO 22185 series can be found on the ISO website.

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).

Field Code Changed

## Introduction

The term “moisture damage” is interpreted in many ways. Cognisance of moisture damage is not always consistent between specialists (e.g. engineers, researchers), residents and building users, leading to confusion. For example, residents and building users would consider the occurrence of condensation on window glass or on the surface of a metal sash to be a prime example of moisture damage, but considering the durability of glass and metal materials, it is not always appropriate to call that “moisture damage.” However, supposing the condensation that occurs on the glass becomes the cause of an outbreak of mould on the curtains, ~~that it~~ would be called moisture damage. It is imperative to resolve the confusion by defining “moisture damage” and by demonstrating the criteria for diagnosing whether an occurring phenomenon in a building is moisture damage or not<sup>[1]</sup>.

This document defines moisture damage in buildings and demonstrates criteria for diagnosing whether a phenomenon that occurs in a building is moisture damage or not, for a common understanding between residents, building users and specialists. It also demonstrates methods for the classification of moisture damage.

This document is the second part of the ISO 22185 series of standards on moisture damage. ~~In the following parts of the ISO 22185-3<sup>1</sup> will show~~ a framework for investigating and taking countermeasures against moisture damage ~~(Part 3), and design methods of building for reducing moisture damage (Part 4) will be shown.~~

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<sup>1</sup> Under preparation. Stage at the time of publication: ISO/PWI 22185-3.

# Diagnosing moisture damage in buildings and implementing countermeasures

## Part 2: Assessment of conditions

### 1 Scope

This document describes methods for diagnosing and assessing conditions that can result in moisture damage impacting the building's energy and durability performance. For the purpose of classifying moisture damage, methods in this document range from basic observation techniques to more complex methods using equipment to more accurately or precisely render a condition assessment and provide data. This document does not ensure that the methods identified will result in the full disclosure of all moisture damage conditions.

### 2 Normative references

ISO 22185-1:2021, *Diagnosing moisture damage in buildings and implementing countermeasures — Part 1: Principles, nomenclature and moisture transport mechanisms*

ISO 16000-18:2011, *Indoor air — Part 18: Detection and enumeration of moulds — Sampling by impaction*

ISO 21105-1:2019, *Performance of buildings — Building enclosure thermal performance verification and commissioning — Part 1: General requirements*

ISO 11276:1995, *Soil quality — Determination of pore water pressure — Tensiometer method*

ISO 29764:2008, *Thermal insulating products for building applications — Determination of deformation under specified compressive load and temperature conditions*

ISO 16534:2020, *Thermal insulating products for building applications — Determination of compressive creep*

ISO 15822:2007, *Test method of doorset opening performance in diagonal deformation — Seismic aspects*

ISO 9972:2015, *Thermal performance of buildings — Determination of air permeability of buildings — Fan pressurization method*

ISO 13788:2012, *Hygrothermal performance of building components and building elements — Internal surface temperature to avoid critical surface humidity and interstitial condensation — Calculation methods*

ISO 4628-3:2016, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 3: Assessment of degree of rusting*

ISO 21105-1:2019, *Performance of buildings — Building enclosure thermal performance verification and commissioning — Part 1: General requirements*

There are no normative references in this document.

### 3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

### 4 Qualitative evaluation of moisture damage

#### 4.1 Visual

##### 4.1.1 Process of diagnosing moisture damage by site inspection

The procedures of diagnosing moisture damage by site inspection of existing buildings are explained in this clause. Although visual inspection plays a central role in the inspection, the final judgement is given by integrating all the information from physiological sensing including touching, smelling and hearing. Inquiry survey on clients, users, designers and builders is also essential in this respect. The content and procedures of the inspection depends on the kind of building (e.g. residential, office, factory, store).

In many cases, the procedures of an inspection are as follows:

- a) ~~a)~~ Request for diagnosis of moisture damages, e.g. from owner, users, designer.

The client asks to diagnose a moisture problem and explains the details of the problems (e.g. kind of moisture damage, kind of building, when and where). The drawing and specification of the building may be referenced.

- b) ~~b)~~ Site inspection: moisture damage or not?

Site inspection is the most important part and whether moisture damage really exists or not is judged with the help of the inquiry to the client (e.g. owner, user, designer). In this stage, the moisture damages described in ISO 22185-1:2021, Figures 2 and 3 are checked with respect to each building element, material, and room. The moisture damage (e.g. deformation, cracks, exfoliation, discoloration, wetting, mould growth, salting out and efflorescence) are identified by mainly visual inspection with the help of information obtained by the smell when entering the room (olfactory sensation), wetness of the wall (sense of touch), temperature of room and wall (thermal sensation), hammering test (sense of hearing). In this identification process, potential moisture source (e.g. rainwater, indoor and/or outdoor vapor, groundwater) and the resulting moisture damage are taken into consideration. Reference to the site plan, drawing and specification of the building, and the information from hearing about the usage of the rooms and environmental conditions are useful.

- c) ~~c)~~ Estimate of causes for moisture damage

The cause(s) of the moisture damage is estimated taking into consideration these results comprehensively. In particular, the identification of the moisture source (e.g. indoor or outdoor vapor, leakage of rainwater, ground water, water leakage from piping) is important and not necessarily easy. In this process, ISO 22185-1:2021, Figures 2 and 3 can be utilized.

- d) ~~d)~~ Second inspection and hearing if necessary

Second inspection and hearing ~~may~~can be required if any questions arise in c), or the cause of moisture damage was difficult to be identified, or inspection at another season is required.

- e) ~~e)~~ Proposal of implementing countermeasures

The cause of the moisture damage is estimated and the countermeasures are proposed. The countermeasure is different depending on the difficulty of identifying the cause of the moisture damage,