

# Decree of the Ministry of the Environment

## on the Moisture Performance of Buildings

By decision of the Ministry of the Environment, the following is hereby laid down pursuant to Section 103 h, subsection 3 and Section 117 c, subsection 3 of the Land Use and Building Act (132/1999), as laid down in Section 103 h, subsection 3 of Act 682/2014 and Section 117 c, subsection 3 of Act 958/2012:

### Chapter 1

#### General

##### Section 1

###### *Scope*

This Decree concerns the design and construction of the moisture performance of new buildings. The Decree also applies to building extensions, increases of calculated floor area, alteration and repair work as well as alteration of the intended use of the building.

##### Section 2

###### *Definitions*

For the purposes of this Decree:

- 1) *vapour barrier* means a material layer which prevents damage by water vapour diffusion to the structure or in the structure;
- 2) *air barrier* means a material layer which prevents damaging air current from passing through the structure;
- 3) *capillary flow* means the liquid transfer in porous materials due to local differences of porous negative pressure;
- 4) *moisture* means chemically unbound water in a gaseous, liquid or solid state;
- 5) *wet room* means a non-residential room where the floor surface is exposed to water due to the room's intended use and water can be spilled or condensed on the wall surfaces in normal use;
- 6) *building moisture* means moisture exceeding the building's in-service equilibrium moisture absorbed in the building or construction materials during or before the construction phase that needs to escape;
- 7) *crawl space* means a purposefully constructed ventilated air space confined by the building's base floor, foundation wall and foundation;
- 8) *technical service life* means the period when the structure or the building part will be technically viable;
- 9) *ventilation opening or slot* means an opening or slot from outside leading to the ventilation clearance or space allowing air flow to enter in the structure or to escape from it;
- 10) *ventilation space* means a continuous air space in a structure for the flow of ventilation air. Such a space shall have a perpendicular height or width against the air flow of at least 0.2 metres;

11) *ventilation gap* means a continuous air gap within a structure for the flow of ventilation air. Such a gap shall have a perpendicular height or width against the air flow of no more than 0.2 metres;

12) *waterproofing* means a material layer which withstands continuous exposure to water and hazardous penetration of water into the structure;

13) *water pressure barrier* means a material layer with seams and support structures which withstands the continuous water pressure loads imposed on the structure and prevents hazardous penetration of water into the structure due to water pressure;

14) *water vapour diffusion* means water vapour molecule movement in a gas mixture under constant total pressure, with the aim of balancing the gas mixture's vapour content or partial pressure differences in said gas mixture;

15) *water vapour convection* means the flow of water vapour together with the gas mixture contained therein, as a result of the total pressure difference.

16) *water vapour resistance* means the ratio between the water vapour concentration prevailing on the surface in various parts of a level layer of material or a layered structure composed of such level layered material or difference between partial pressures of water vapour and a layer of material or water vapour stream diffusing through a structure in a continuous state per area unit;

17) *roof* means the structure composed of the roofing and a possible underlay and the structural components immediately supporting them.

### Section 3

#### *Essential technical requirements for a building's moisture performance*

The principal designer, building designer and special designer shall, in accordance with their respective duties, design the building so that it meets the essential technical requirements for moisture performance in accordance with its intended use. For alteration and repair work or alteration of the intended use, the designer shall determine the building's initial construction method and moisture performance.

Considering the internal and external moisture stresses, the building, structures and building elements must be functional in terms of their moisture performance through their planned technical service life. The building's excessive moisture content or moisture accumulation in the building's parts or interior surfaces must not damage the building or cause health hazard to the occupants.

### Section 4

#### *Moisture performance of buildings in alteration and repair work or in alteration of the intended use of the building*

It is not necessary to modify a building's moisture performance in renovation and alteration work or in alteration of the intended use if the building's moisture performance is functional. Structures with functional moisture performance that have undergone alteration and repair work or alteration of the intended use and where the technical service life has ended or that have damaged moisture performance may be repaired by observing the building practices used during the construction period. If the structure does not have defects in its design or construction which require modifications to its moisture performance, the alteration and repair work or the alteration of the intended use shall primarily be carried out in accordance with the functionality of the original structure. Alteration and repair work or alteration of the intended use may be conducted in compliance with this Decree, if the intent is to improve the building's moisture performance. If the structure is likely to cause health hazard or damages the moisture performance of the building, alteration and repair work or alteration of the intended use shall be conducted in compliance with this Decree.

## Chapter 2

### General principles of moisture performance

#### Section 5

##### *Building's moisture performance*

Water vapour, water, snow or ice from external or internal moisture sources must not cause damage by passing through the structures. Rainwater or snow may not enter and moisture may not accumulate in the enclosing structure through windows, doors or other constructions attached to the enclosure, building parts or equipment. The building's enclosure together with its construction layers and joints must form a whole, preventing the transfer of water across the surface of the enclosure into the construction by wind, slanting rain and wind pressure.

Building moisture and internal or external moisture transferred occasionally to the structures must be able to escape without causing damage. Structures with surfaces exposed to moisture must be resistant to the effects of water.

#### Section 6

##### *Air and vapour tightness of structures*

The building's enclosure together with its joints and air and vapour tightness of its internal structures must prevent the type of transfer of water vapour into the structures that damages their moisture performance.

#### Section 7

##### *Ventilation spaces and gaps of structures*

The ventilation openings or slots leading to the ventilation space or gap of a structure equipped with a ventilation space or gap must be positioned so that the ventilation space or gap is fully usable as a ventilation air flow path and that the ventilation space or gap is free of enclosed, non-ventilated areas.

#### Section 8

##### *Elevation of the building*

As regards the selection of the elevation of the building, the building designer and special designer shall, in accordance with their respective duties, consider the surface water and ground-water level and the flood risk.

In order to mitigate the risk of moisture damage, the structures exposed to moisture and the drainage systems of the foundation must be reliable throughout their planned service life.

#### Section 9

##### *Base fills and gravel backfills of buildings*

Humus soil, organic substances decomposing or rotting from moisture or building waste must not be left under new buildings, in their crawl spaces and in their gravel backfills functioning as a drainage layer.

During alteration or repair work of the building's foundation, foundation wall or base floor, subsection 1 shall only be applicable to the repaired or modified parts.

## Section 10

### *Water leak detection, freezing and water condensing in ventilation, heating and cooling equipment and other systems*

In new buildings, the structural solutions must direct water leaks in ventilation, heating and cooling equipment or other systems or their attached devices to a visible location. If there is a risk of water leakage from such systems or devices, these must be available for inspections, repairs and replacement. Alteration and repair work or alteration of the intended use of the building are subject to the provisions of Section 4.

Water must not freeze in the system's pipes, channels or devices. Condensed water on the system's pipes, channels or devices must not cause harm or the condensed water must be removable without causing damage.

## Section 11

### *Essential technical requirements of building products*

The properties of building products used in the structures shall meet the requirements presented in the respective design and the building products must be suitable for the conditions of the construction site. When installed, the building product must be in a suitable condition for its intended use. The building product must sustain any stresses caused by installation and operating conditions throughout the service life of the structure or during the planned maintenance and repair interval.

## Chapter 3

### **Moisture control of a construction project**

## Section 12

### *Drafting and content of the moisture control statement of a construction project*

A party engaging in a construction project shall be responsible for preparing a moisture control statement for the construction project.

The construction project's moisture control statement shall contain general construction project information, moisture control requirements at different stages of the project, procedures and measures for the verification of moisture control requirements and personnel in charge of moisture control. The construction project's moisture control statement shall also contain information regarding the person responsible for moisture control of a construction project.

## Section 13

### *Drafting and content of the site moisture control plan*

The responsible site manager must manage the preparation of the site's moisture control plan based on the construction project's moisture control statement.

The contents of this moisture control plan are subject to Section 15 of the Ministry of the Environment Decree (216/2015) on the Preparation of Plans and Reports concerning Construction. Additionally, the site's moisture control plan must contain information on the persons responsible for moisture control at the site for each construction phase.

Section 14

*Protection of building products and parts*

The person responsible for each construction phase shall be responsible for the protection of building products and unfinished building parts from becoming wet and from impurities during storage at the site and during construction.

Section 15

*Drying of structures*

The person responsible for the construction phase shall be responsible for that the moisture content in the structures and the drying ratio of building moisture makes it possible to cover the structure with a layer of drying retarder, coating or construction without damaging the structure. The person responsible for the construction phase shall use moisture measurements to guarantee proper moisture content of structures before moving on to the next work phase.

Chapter 4

**Drainage of the building ground**

Section 16

*Removal of storm water*

The building designer and special designer shall, in accordance with their respective duties, design the drainage of the ground surface and storm water management in such a way that storm water is removed away from the proximity of the building with the help of a storm water system.

Section 17

*Drainage of the building ground*

The building designer and special designer shall, in accordance with their respective duties, design the drainage of the building ground for interrupting the capillary flow and keeping the level of ground water sufficiently far away from the building's base floor and for removing the foundation drainage water away from the proximity of the foundation and from below the building. The building ground may be left without drainage if the special designer has determined on the basis of the report on the foundation and building ground conditions that the water permeability of the foundation soil and the groundwater level are not likely to cause harm to the building's moisture performance.

## Chapter 5

### **Building's base floor and wall structures facing the ground**

#### Section 18

##### *Base floor in contact with the ground*

The upper surface of the floor of the base floor structure must be located at the minimum 0.3 metres above the ground surface outside the building except for the floors of the spaces that are either partially or wholly below the ground surface.

If the upper surface of the floor is, for some specific reason, less than 0.3 metres above the ground compared to the surrounding ground surface, the building designer and special designer shall, in accordance with their respective duties, pay particular attention to the moisture performance of the structure.

#### Section 19

##### *Base floor with the crawl space*

No water must accumulate in the crawl space under the base floor. The crawl space must be ventilated. Moisture in the crawl space must not damage the functionality or durability of structures.

#### Section 20

##### *Crawl space height and access*

In a new building, the crawl space height must be 0.8 metres on average at the minimum. The crawl space must be accessible for inspections and maintenance of the equipment and systems located there.

#### Section 21

##### *Wall structures against the ground*

The structure of the exterior wall against the ground must be waterproofed or isolated against water pressure or a structurally managed water removal system allowing the cellar wall to dry in an outward direction must be used to prevent moisture from the surrounding ground and storm water from penetrating the wall structure. Waterproofing or water pressure barrier must be located on the outer surface of the exterior wall structure against the ground or inside the exterior thermal insulation facing the ground.

#### Section 22

##### *Moisture transferred from the foundation wall and base floor*

Moisture from the foundation wall and the base floor's concrete slab must not transfer harmfully to the wooden sole plates or upper wall and floor structures.

#### Section 23

##### *Structures exposed to water pressure*

Structures exposed to water pressure must withstand continuous water pressure effects throughout the planned service life of the structure. Such structures must have water pressure barrier which prevents external water from penetrating harmfully into the structure.

## Chapter 6

### **Attic floor and also wall and roof structures in contact with external air**

#### Section 24

##### *External wall structures*

External walls and their various layers must form a whole that prevents water from harmfully penetrating into the structures. The water vapour resistance and air tightness of external walls and their various layers as well as the structures attached to the external wall and joints to the external wall must prevent the accumulation of moisture content of wall structures from internal water vapour diffusion or convection that is harmful from the viewpoint of moisture performance of structures. If air barriers or vapour barriers have been used in the structure, the seams, edges and penetrations must be tight.

#### Section 25

##### *External cladding*

No water may enter behind the wall structure's external cladding or the water and moisture from behind the external cladding must be drained without damaging the structure. Unless moisture is removed by other methods, the space behind the external cladding must be ventilated.

#### Section 26

##### *Water drainage from the roof*

Water must be able to drain off the roof without causing damage to the building. The roof structures and joints must be properly inclined and sealed for water drainage.

#### Section 27

##### *Structures of the attic floor*

The layers of attic floor structures and the ventilation must prevent the accumulation of damaging moisture into the roof structure resulting from water vapour diffusion or airflow. If air barriers or vapour barriers have been used in the structure, the seams, edges and penetrations must be tight.

## Chapter 7

### **Wet rooms**

#### Section 28

##### *Wet room waterproofing and structures*

Water must not drift into or migrate as a capillary flow from the wet rooms to the surrounding structures and rooms. Constructions behind surfaces exposed to running water, repetitious splash water or water condensation must be waterproofed. The flooring and wall covering must provide waterproofing, or separate waterproofing must be installed under the flooring and behind the wall covering. No waterproofing is needed behind the coating on the wall in a separate toilet or sauna. Due to the way wet rooms are used, the coating of the ceiling must withstand

splash water, temporarily high relative air humidity and temporary condensation of moisture on the ceiling's surface.

Wet room waterproofing must form a whole which is impermeable on all waterproofed surfaces as well as on their seams, penetrations and joints. The flooring functioning as waterproofing or waterproofing located underneath the flooring in wet rooms must have a watertight connection with the waterproofing of the wall.

The structures of the wet rooms must be rigid enough that the thermal and moisture movements do no damage the wet room waterproofing or surface structures. If, for a specific reason, no waterproofing is used in the wet room structures, the building designer or special designer shall, in accordance with their respective duties, prove in their design that the lack of waterproofing does not risk the fulfilment of essential technical requirements referred to in Section 117 c of the Land Use and Building Act.

#### Section 29

##### *Wet room floor slopes and penetrations*

The slope of the wet room floor must allow water to flow into the floor drain. The joint between waterproofing and the floor drain must be tight.

#### Section 30

##### *Entry into force*

This Decree shall enter into force on 1 January 2018.

Upon the entry into force of this Decree, pending projects shall be subject to the rules valid at the time of entry into force of this Decree.

Helsinki, 24 November 2017

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