Quality guidelines for doors and windows

The quality assessment of **Profin Oy**'s windows, doors, and glass sliding doors is carried out in accordance with the following quality guidelines. The warranty is in effect only if these guidelines are complied with.
Our guidelines are based on the following sets of guidelines and standards:

- SFS 4434 EHD: Wooden doors, quality requirements
- SFS 5821: Wooden doors, dimensions
- RT 29-10870: Puisten ikkunoiden, puualumiini-ikkunoiden ja parvekeovien teollinen pintakäsittely, laatuvaatimukset ('Industrial surface treatment of wooden windows, wood-aluminium windows, and balcony doors – quality requirements')
- SFS- EN 14351: Ikkunat ja ovet ('Windows and doors'): Product standard, functional properties, Part 1: Windows and entrance doors without fire- and/or smoke-resistance properties
- RT 41-10644: Puuikkunat ('Wooden windows')
- RT 41-10431: Wooden windows and louvred panels, quality requirements (SFS 4433)
- RT-10434: Wooden windows, glazing of single glass panes (SFS 4151)
- SFS 4003 EHD: Wood windows, glazing of sealed insulating glass units
- RT 38-10941: Umpiolasit, laatuvaatimukset ja testausmenetelmät ('Insulated glazing, quality requirements and testing methods')
- RT 38-10316: Lasilevyn paksuuden mitoitus ('Dimensioning of the thickness of a pane of glass')
- RT 38-10901: Rakennuslasit, tasolasit ('Architectural glass, flat glass')
- Guidelines provided by the Finnish Flat Glass Association and warranty terms for glass elements
- RT 41-10110: Ikkunan vesipellit ('Windowsills)
- RT 42-10643: Puuovet ('Wooden doors')
- RT 80-10632: Rakennuksen suojapellitykset ('Metal plates for buildings)
- Frame RYL2000 national specifications
- General agreement terms

Quality guidelines and assessment of quality

> 1. Inspection of delivered products and defect notifications
> 2. Repair of defects and deficiencies
> 3. Functional properties
> 4. Moisture and condensation
> 5. Quality assessment of the surface treatment of doors and windows

1. Inspection of delivered products and defect notifications

When products are received at a project site, the buyer or a person authorised by the buyer must visually inspect them. A comment must be made on the consignment note about any quality defects or damage caused in transport. The quantity of the products in the delivery must also be checked, without opening of the packaging.

Before the products' installation, the buyer or a person authorised thereby must check the products in an appropriate manner. A defective product must not be installed without the matter first being discussed with the manufacturer.

The buyer must give notice of any dents, dirt, or scratches on the products before installing them. Any defect notice regarding seams, joints, patching, swelling, finger joints, or other elements affected by humidity must be filed within 10 weeks.

The manufacturer provides manuals and service instructions for its products, and the user/buyer must comply with these. The warranty is valid only if the manufacturer's instructions have been complied with. The manufacturer is not liable for any further damage caused by a defect. The manufacturer also provides guidelines for the receipt, storage, and installation of the products, which the buyer must follow to ensure that the warranty remains in effect. The manufacturer is relieved of product-related liability if the product in question has not been handled or stored appropriately or has not been installed correctly. Products that have not been installed must be stored in a place where they are protected from rain and harmful humidity rising, for example, from the ground.

Humidity accumulating and condensing under a protective plastic cover during storage may damage the product. The manufacturer does not compensate for any damage caused by excessive condensation accumulating during storage. The buyer, the dealer, or whoever else receives the products is responsible for storing and maintaining them in accordance with Profin Oy's storage instructions. The products must also be kept in a space with adequate ventilation. A receiver who will keep the products in intermediate storage without opening the packaging must ensure that long-term storage Does not cause any damage to the products (because of condensation, dirt, etc.). The warranty does not apply to any damage caused by long-term storage, where the term 'long-term storage' refers to storage that lasts more than 30 days.

2. Repair of defects and deficiencies

If something is absent from the delivery, the missing parts or components will be delivered to the client as soon as possible. In the event of a manufacturing defect, the manufacturer will either repair the defect or replace the product or the defective component. The buyer must not repair any defects in the name of the manufacturer without agreeing on the matter with the manufacturer in advance.

3. Functional properties

According to regulations, the most essential properties of doors and windows are related to function. Heat and sound insulation, fire-resistance, and safety are the most important functional properties. Heat insulation properties can be assessed in a completed building by means of, for example, thermal imaging. All thermal imaging reports for this purpose must be prepared by a certified expert and drawn up in accordance with the Ratu 1213-S guidelines.

A sound insulation assessment can be carried out in a finished residential space with a mobile measuring device. Functional properties also include air-tightness, the level of rain-proofness, and wind load resistance, for which the required levels are usually stated in the agreement. These properties can be analysed accurately only in laboratory conditions. Visual and tactile inspections can only give a rough estimate. As absolute air-tightness is not required of a product belonging to the highest air-tightness class, small and localised air leaks are acceptable.

Windows and doors must not be used as load-bearing structures in a building. They may only transfer the horizontal wind load along their surface to the building's load-bearing frame via the casing. Slanting glass surfaces may not be used, because of loads and the window's insulation solutions.

4. Moisture and condensation

The manufacturer is not liable for any damage to windows, doors, or their components caused by moisture that has accumulated during the construction stage It is recommended that the openings for doors and windows be protected with plastic sheeting or protective structures with a similar effect when the building is being dried out.
In addition, measures must be taken to prevent moisture from being transferred to the products via the surrounding building structures. The relative humidity (RH) in the building must not be beyond the range regarded as normal for a residential space: 25–60%. Problems that can be caused by moisture accumulating during the construction stage include opening and splitting of joints, peeling of paint, splitting of glued seams in wooden components,

changes to the gap between the window and the jamb, and oxidation and rusting of metal parts.

Doors and windows should be installed only when the conditions in the building are similar to what they will be once the building is completed. Windows may be installed when RH indoors remains below 60% and the level of moisture in the concrete structures within the building is below 85% – as measured from a drilled hole, not the surface. The humidity level of pressure-treated wood used in support frames for stone and concrete walls must not exceed 20%.

Installing the roof, walls, and windows in winter before laying concrete floors may result in irreversible moisture damage to the products. The opening of joints (including glued joints) as a result of this construction method is not considered a defect in the product.

Condensation on the inner surface of the inside glass can occur in certain conditions related to the relationship between RH and the temperature of the indoor air. It is not caused by a defect in the window. Insufficient ventilation too may cause condensation on the surface of the inner glass. Positive air pressure in the building may create moisture in the space between the window's inner and outer frame, causing the inner surface of the outermost glass to fog up. This is not caused by a manufacturing defect, and there is no refund in such an event.

We recommend that ventilation equipment be used to reduce the humidity level during the construction phase. Condensation can occasionally occur in fixed and single-frame openable windows, and on the edges of the glass panel of single doors, depending on the difference between the indoor and outdoor temperature, the humidity of the indoor air, air circulation at the inner surface of the window, and/or deficiencies in the ventilation in front of the window. Air must circulate properly at the inner surfaces of the windows, particularly in rooms with under-floor heating.

The insulation in seams of window frames and casings must be such that it prevents the accumulation of excessive condensation caused by the flow of room air into the space between panes. When the seams of the inner windows are more air-tight than the seams of the outermost windows, moisture in the space between these panes of glass can escape to the outside. If the building has adequate air ventilation, in accordance with building regulations, and air flow from inside outward, condensation does not occur on the surfaces between panes. Condensation on the air-gap-facing surface of the inner or outer pane of glass caused by ventilation deficiencies is not a manufacturing defect and, therefore, does not come under warranty. Even if the window has a high level of thermal insulation (U value below 1.0 W/m^2K), some condensation can occasionally occur on the outside surface of the outermost glass, depending on the season, daily fluctuations in temperature, and thermal radiation. This is caused by a natural phenomenon, similar to what happens to car windows in winter, and is not a manufacturing defect; accordingly, it does not fall under warranty.

5. Quality assessment of the surface treatment of doors and windows

The quality requirements for product surfaces apply mainly for surfaces that remain visible when the door or window is closed. The finished surface of a casing is assessed via visual inspection from a distance of approximately two metres with light falling on the surface from behind the inspector. A portable light source may be used in the inspection of horizontal surfaces.

The surfaces of doors and windows must have a uniform overall appearance. The natural grain of the wood may be slightly visible. No finger joints are to be visible on the surface of a varnished or stained product. In oversized casing structures, such as those of sliding doors, finger joints may be used also in locations where they are visible.

The quality requirements for door and window surfaces that are visible only some of the time are one category below the quality level acceptable for visible internal surfaces of doors and windows. Greater variation in the surface quality of the casing of entrance doors is accepted than in the surface quality of the door panel (see RT 42-10643, Table 7).

Slight variation in colour tone and shine is accepted in touch-up painting. Factory-painted surfaces may be repaired by painting with a brush on the project site. For varnished products, tone variation caused by the natural grain pattern of the wood is acceptable.

The sides of the window frames must be of the same colour tone as the rest of the window, but the surface does not have to be as even as elsewhere.

6. Manufacturing accuracy and properties

Meeting the requirements set for functional properties is the most vital aspect of the manufacturing accuracy of doors and windows.

Air-tightness, level of rain-proofing, and resistance to wind load number among the functional properties that are assessed for windows. The level of acoustic and thermal insulation may also be assessed by means of either calculation or testing.

Profin Oy's products and their components are manufactured in line with good work practices and with high-quality materials and methods.

7. The quality of casings and frames

Whenever possible, the visible surfaces of doors and windows are finished with a surface treatment or knots in the wood are removed to prevent the area from yellowing or sap from

bubbling onto the treated surface. Slight yellowing and some surfacing of sap is acceptable on those surfaces that remain hidden when the door or window is closed. Slight variation in the colour tone, unevenness in the paint surface, and cracks in the surface are accepted for the casing. See point 5 for a more detailed description of the surface quality requirements for the casing.

8. The functionality of windows, doors, and metal parts

Doors and windows have metal parts that are corrosion-resistant or have been treated against corrosion and that must function flawlessly in the structure. The size, strength, and quantity of metal parts must be such that they can withstand the strain caused by normal use.

On a project site, whether a frame or a ventilation window is square can be determined via measurement of the diagonals (cross-measuring). The maximum difference accepted in the length of the diagonals is 1.5–6.0 mm, depending on the longer dimension of the frame or ventilation window (either width or height). If the cross-measurement fails to fall within these limits, the inspector must first check that the windows have been installed and adjusted in accordance with the manufacturer's instructions. Adjacent frames installed in the same casing must be adjusted such that the height difference at the top does not exceed 2 mm.

The corner joints of the casing may open if the casing is screwed in place too tightly. Instructions for installation of the casing are provided in the installation guidelines.

The way in which doors and windows are installed has a significant impact on their functionality. The installation must always be carried out by a skilled fitter in accordance with the manufacturer's instructions. Temporary warping and dimension changes of up to 5mm caused by fluctuation in humidity and temperature are allowed for doors. Because of their colour, black and dark brown doors are subjected to great thermal stresses. This may result in some damage, such as warping of the door, exceeding the 5 mm limit. This damage is not caused by a manufacturing defect, and there is no refund.

9. Glazing

The typical characteristics of glass include low impact-resistance and a tendency to crack.

Glass may suffer damage because of the following factors:

* Humidity: humidity may damage and corrode fire-resistant glass.
* Direct sunlight: there is a risk of thermal shock; the filler for insulated and fire-resistant glass, in particular, may react with UV radiation
* Concrete dust and water containing concrete: there is a risk of corrosion in the surfaces (glass and aluminium)
* Sparks from welding and grinding: there is a risk of damage to the surfaces

* Rapid fluctuation in temperature: a pane of glass could crack because of internal tensions (thermal shock)

The glass quality must be inspected from a distance of two metres, with the inspector facing the surface at a right angle, in normal daylight. 'Normal daylight' refers to sunny conditions, but no direct sunlight should fall on the glass.

Image distortion in single-pane glass

A single, uncoated pane of glass must not cause distracting image distortion when inspected at a 45-degree angle from a distance of 4.5 metres. The image reflected from a pane of insulated glass may vary because changes in air pressure and temperature cause warping in the glass. This is a normal phenomenon and an indicator of the insulated pane's air-tightness.

Localised defects (these notes are taken from the quality criteria set by the Finnish Flat Glass Association)

Glass is divided into a central area and an outer area. The outer areas cover 10% of each edge, with the rest of the glass belonging to the central area.

a) Single glazing: Localised defects up to 2 mm in diameter are considered acceptable. The distance between defects must not be less than 200 mm.

b) Multi-layer glazing, laminated glass, and insulated glass: The maximum number of defects accepted can be calculated by multiplication of the number of defects acceptable for a single pane by the number of layers.

Surface defects

Shiny and matte scratches are acceptable if they are not easily noticeable.

Defects in the outer areas

Defects in the outer areas must not cause chipping of the glass.

The light-penetration of coated glass (for example, selective glass) is lower than that of ordinary glass. In addition, coated glass can cause some reflections. Panes of insulated glass may reflect rainbow colours in certain lighting conditions and/or from certain angles. Some faint patches (in a leopard -spot pattern) may be observed also. These optical phenomena are not considered defects. Condensation can occasionally occur on the exterior surface of the outermost pane if the glass has a high thermal insulation level (a U value below 1.0 W/m^2K). This happens in exceptional weather conditions when only a little warm air leaks out of the window. It is not considered a quality defect in the window.

Impurities between panes

The surfaces must be free of all impurities if the panes will be permanently against each other. It is acceptable for there to be some individual dirt particles on the surfaces, but there should not be any sizeable patches, streaks, or accumulations of dirt. Dirt spots are accepted if they are not visible from a distance of two metres in normal daylight.

If notice of a defect is filed with respect to an insulated glass element, the following information must be included in the notice: if possible; the name of the project and the order number; the markings on the element (manufacturer and year of manufacture); the cause of the claim, complete with a simple drawing; and the code, type, and hole type for the glass panel.

The warranty for insulated glass is valid only if the following conditions are met:

* The glass element is not subjected to unusual strain, such as strain transferred from the building's frame
* The frame surrounding the glass element and the filler in the seams is serviced regularly (surface treatment of the wood, insulation, and installation of trim)
* Glass surfaces are not painted, and no adhesive tape, film, or similar adhesive material that may weaken insulated glass is attached to the surface
* No dark blinds are installed for the product (these could lead to breaking of the glass as a result of thermal shock)

The warranty for a replacement element ends on the expiry date of the original element's warranty. The window must be installed in such a manner that it can be replaced without dismantling of any of the surrounding wall structure. Profin Oy is not liable for costs arising from dismantling of the surrounding structure.

Other matters

It is acceptable for some insects, street dust, and pollen to find their way into the space between the panes of glass. Any dirt on the glass surfaces may be removed with detergents available on the market. Low-volume sounds caused by the structures of the window or the thermal expansion of wood are acceptable. In most cases, the sounds stop after the tension in the structures has disappeared. The appearance of windows and doors is assessed through inspection of those doors and windows that can be seen at any given time. Slight variation in colour tone characteristic of wood is acceptable. For products with a veneered surface, a pattern and variation in the colour tone characteristic of wood are acceptable.

10. Boards and trim

Indoor and outdoor trim and boards must be attached in a manner that allows the movement caused by changes in humidity or temperature. Boards for installation must be stored in a dry

place, for protection from moisture. Outdoors and, in wet rooms, the bottom edge of the board must not come in contact with the floor or the windowsill.

Trims outside the windows and doors must be installed in such a way as to prevent rain water from entering the structures of the wall or the gap between the wall and the board. In addition, in the installation of boards or trim, it must be ensured that any ventilation holes are not blocked.

11. Responsibility for service and maintenance

After installation, the buyer is responsible for the maintenance, functionality, and adjustments of the doors and windows, unless otherwise agreed.

12. Installation

Doors and windows must be installed such that the space between the casing and the door or window is in line with the applicable standards and regulations. Windows and doors must open and close without any problems. The air-tightness of the joint between the wall and the frame must be designed to correspond with the air-tightness of the wall structure. The surfaces of doors and windows must be intact after installation. Treated surfaces that will remain visible must not have stains, cracks, or other defects. Structures that may cause additional strain, including railings, safety bars, and awnings, must not be attached to doors or windows. Any defects arising from flaws in the installation surface (the wall structure) do not come under warranty.

13. Service and maintenance

The warranty remainss in effect only if Profin Oy's receipt, storage, handling, and maintenance instructions and manual have been complied with. Defects caused by failure to follow these instructions do not come under warranty.

Profin Oy