

Call for action on surface temperature factor

Surface temperature factor – frame and glazing bars in the draft Standardisation Request for doors, windows and other related products

Joint position on the draft Standardisation Request DWS to CEN under the CPR

Key message

The signatory organisations call on the European Commission not to introduce Surface Temperature Factor (f_{Rsi}) – frame and glazing bars – as essential characteristics for windows and hatches, pedestrian doorsets, individual rooflights and individual roof hatches as well as continuous rooflights. Condensation and mould risks depend on the building, the installation, the climate and occupant behaviour and should therefore be addressed through installation rules, not through product characteristics that cannot be meaningfully declared in an isolated DoPC.

1 f_{Rsi} Cannot Be Meaningfully Declared as a Product Characteristic

The f_{Rsi} value of an installed product depends on some installation parameters that are unknown to the manufacturer at the time of product declaration, as well as building-specific factors such as ventilation, occupancy and climatic conditions in the relevant Member State.

A change to any of the installation parameters or building-specific factors changes the calculated f_{Rsi} value for an identical product as installed in the building. A product-level declaration assessed with harmonized conditions is therefore of limited use for the variety of applications in buildings across the EU.

2 Surface temperature and f_{Rsi} are addressing a symptom, not a cause

Condensation and mould prevention in buildings should be addressed through multiple levers like, for example, adequate ventilation rates, mitigation of excessive condensation (e.g. through drainage), mould prevention (e.g. mould-resistant coating) or shading devices (e.g. roller shutter to reduce radiative heat loss). Surface temperature factor represents only one level amongst several.

Regulating a complex topic through single-sided product essential characteristic will discourage designers from finding more efficient solutions. Furthermore, a single measure, regulating surface temperature cannot prevent condensation and mould.

3 Existing National Approaches Confirm Building-Level Treatment

Several Member States address condensation risk and mould prevention through building regulations and installation rules – not through product characteristics. For example, in Germany the f_{Rsi} requirement for reveal areas under DIN 4108-2 is an application rule for the installation of the building components.

For thermal bridging, already covered by the U-value, a new essential characteristic on surface temperature factor would duplicate the established framework.

4 Conflict with Environmental and Energy Efficiency Objectives

Higher internal surface temperature of products like windows can be achieved, often at the expense of environmental performance (adding more layers of glass or extra gaskets) or energy efficiency (using heat-dissipating elements like metal plates which increase thermal transmittance). A product optimised for demanding U-value requirements could face a disadvantage under a surface-temperature threshold, while a product redesigned to meet that threshold could consume more energy.

5 Condensation on Glazing: An Important Early-Warning Signal for poor Indoor Air Quality

Visible condensation on glazing is often the first – and sometimes the only – signal to occupants that a building is inadequately ventilated or that indoor humidity is excessive. Suppressing this visible signal through a product requirement does not address the underlying dampness of the building. If indoor humidity remains high, moisture may accumulate at less visible locations, including reveals, thermal bridges, behind furniture or within building assemblies. The regulatory objective should focus on controlling underlying conditions, not on suppressing one visible symptom.

6 Recommendations to the European Commission

The signatory organisations respectfully request that the European Commission:

- does not include "Surface Temperature Factor – frame" and "Surface Temperature Factor – glazing bars" as essential characteristics in the Standardisation Request DWS;
- maintains regulatory coherence between the Construction Products Regulation and the Energy Performance of Buildings Directive;
- ensures that any future approach distinguishes clearly between product characteristics and application or installation rules; and
- undertakes further technical analysis of the interaction between fR_{si} , thermal transmittance, building-level thermal bridges, indoor humidity and actual mould risk before considering any future regulatory proposal.

Annex: Technical Background

A.1 Objective and Technical Meaning of the Surface Temperature Factor

The surface temperature factor f_{Rsi} is used to assess the risk of surface condensation and associated mould growth. It expresses the relationship between the internal surface temperature and the indoor and outdoor air temperatures. The calculation method is defined in EN ISO 10211. Mould growth is a multi-factorial phenomenon. It requires the simultaneous presence of:

- Relative humidity at the surface exceeding 80 percent for at least 12 hours per day over at least five consecutive days;
- Surface temperature within the mould growth range (generally 10 °C to 35 °C);
- Availability of nutrients and minerals at the surface;
- pH value between 4.5 and 6.5; and
- Sufficient moisture absorption capacity and capillarity of the surface material.

The surfaces of the products in question generally provide unfavourable conditions for mould growth. The lowest temperatures typically occur on the glass, which neither absorbs moisture nor provides nutrients. Intermittent condensation at the lower glazing edge under unfavourable boundary conditions does not automatically result in mould. The critical location is the reveal and the junction between frame, installation joint and surrounding wall – combining thermal-bridge effects with surfaces that may provide nutrients, which are not part of the product.

A.2 Boundary Conditions and Limitations of Product-Level Declaration

According to EN ISO 10211, the f_{Rsi} value is calculated as the ratio of the difference between the room-side surface temperature and the outdoor air temperature to the difference between indoor and outdoor air temperatures. Determination requires knowledge of:

- the geometry and construction of the reveal and the position of the frame within the wall;
- the insulation and sealing of the installation joint;
- the thermal properties and geometry of the surrounding wall; and
- the calculation assumptions and boundary conditions like, for example, outside climatic conditions in the region of installation.

A.3 The Proposed Characteristics Address a Symptom, Not the Cause

Condensation and mould formation result from the interaction of the building, the installation and its use. Effective prevention requires a coordinated approach:

- Adequate ventilation to control indoor humidity – the primary and most effective measure;
- Appropriate heating and moisture-load management by building occupants;
- Correct design and insulation of the reveal and installation joint;
- Adequate sealing, drainage and protection of relevant surfaces;
- External shading devices (roller shutters, external blinds) that raise glazing surface temperature at night without affecting U-value; and
- Building-level assessment of thermal bridges and clear information for designers and installers.

About

About CEI-Bois – The European Confederation of Woodworking Industries (CEI-Bois) represents 21 European and National organisations from 15 countries and is the body backing the interests of the whole industrial European wood sector: more than 180.000 companies generating an annual turnover of 133 billion EUR and employing 1 million workers in the EU.

European Aluminium, founded in 1981 and based in Brussels, is a member-based industry association representing Europe's most complete and thriving metals value chain. Their 100+ members include companies engaged in bauxite mining; alumina refineries; primary aluminium producers; downstream manufacturers of extruded, rolled and cast aluminium; producers of recycled aluminium and national aluminium associations, representing more than 600 plants in 30 European countries. European Aluminium actively engages with policy makers and the wider stakeholder community to promote the outstanding properties of aluminium, secure growth, and optimise the metal's contribution to meeting the EU's sustainability and industrial leadership ambitions.

EUROLUX AISBL represents the interests of the European manufacturers of individual rooflights, continuous rooflights and natural ventilation and smoke/heat exhaust systems (NSHEVS). It promotes the use of rooflights for natural ventilation and illumination of interiors with natural daylight, as well as smoke & heat exhaust ventilation with NSHEVS.

EuroWindow AISBL was founded as an international non-profit Association, in order to represent the interests of the European window, door and facade (curtain walling) sector. Our 21 national associations speak for European window, door and facade manufacturers that are in direct contact with consumers, and thereby having large insights on consumers' demands and expectations. We are at the forefront interacting with dealers, installers and consumers buying windows and doors, and the companies behind the associations cover selling all over Europe.

EPPA, the European PVC Profiles and related Building Products Association represents the manufacturers of PVC window systems and related building products in Europe. About 25,000 employees process about 1,4 million tonnes of PVC creating a turnover of €4 billion with profile systems and building products. Based in Brussels, EPPA provides a common platform for bundling national activities in the fields of PVC window technology, recycling, environment and public affairs.

Small Business Standards (SBS) is the European association that represents small and medium-sized enterprises' (SMEs) interests in the standardisation process at both European and international level.

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