

GERMANY

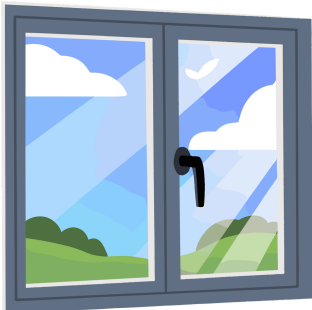


Legislative framework

The Building Energy Act (GEG) is the overarching legal framework. The standard **DIN 4108-2** defines requirements for summer thermal comfort (overheating protection) and the **DIN V 18599** sets the methodology for overall energy performance of buildings.

Solar factor integration

- Integrated into a **building-level performance approach**
- Solar gains are assessed within summer **thermal comfort** assessment and **energy performance** calculations
- Considers interaction of **glazing properties**, orientation, shading systems and ventilation



Solar factor requirements

There is no fixed national g-value limit for glazing, but compliance is achieved through **limitation of overheating risk** (DIN 4108-2) and the **energy performance targets** (DIN V 18599).

Why is it good?

- Enables a **holistic assessment at building level** which takes into account, orientation, glazing area and building use
- Balances **summer comfort** (overheating) with **winter solar gains**
- Encourages **optimised combinations** of glazing and shading solutions

Impact on glazing

Glazing is a **key parameter**, but not regulated on its own. The performance depends on **building design and geometry**.

The regulation supports **flexible system solutions** instead of fixed product limited.

ROMANIA



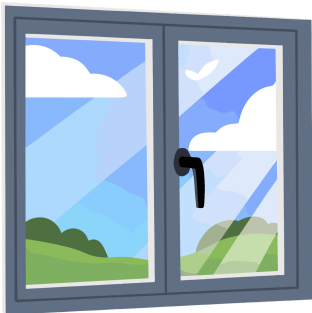
Legislative framework

The **Methodology (Mc 001-2022)** introduces the concept of **optimal solar factor for glazed elements**. The aim is to balance winter solar gains and summer overheating risk, while ensuring adequate daylighting.

Solar factor integration

- Recommends **g-values** for glazing
- Applicable to **residential buildings & non-residential**
- Differentiated by **climate zones** and **exposure** to direct solar radiation

Solar factor requirements



The recommended g-value varies depending on the climatic zone. For residential buildings, it ranges from a maximum of **0.30 in the warmest zone** to a minimum of **>0.50 in the coldest**. For **non-residential**, values are even lower.

Why is it good?

- Addresses overheating risks through **passive solution** with direct glazing recommendations
- Recommended g-values are **adapted to climatic zones**
- Considers the **optimal solar factor** for each building

Impact on glazing

The five climatic zones, each with their **own recommended g-values**, help prioritise the most suitable glazing solutions. This straightforward approach raises awareness of the **positive role of glazing in ensuring summer comfort**.

TURKEY

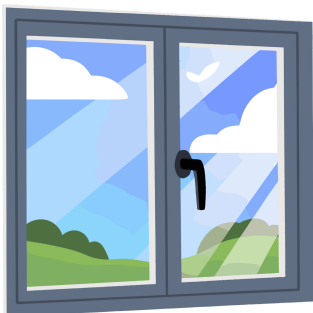


Legislative framework

The ‘**Thermal Insulation Requirements for Buildings**’ (TS 825:2024), has been considering solar factor for many year. The regulation has been significantly updated in 2025.

Solar factor integration

- Applies to **new** buildings and **renovations**
- Covers **six climatic zones**, each with different heating and cooling needs
- Solar gain calculated using **limit g-values**, considering the **amount of glazing** on the façade, orientation, etc.



Solar factor requirements

The regulation requires a **g-value ≤ 0.45** in the first 3 warm climatic zones to comply with cooling requirements.

Why is it good?

- Improves **overall building energy performance**
- Supports **climate-appropriate glazing choices** and enhances indoor comfort throughout all seasons, including summer

Impact on glazing

Highlights the importance of selecting the **right glazing to meet the energy performance targets** of the standard. As the balance between U-value and g-value becomes more important, the number of glazing options that comply with the standard will continue to increase.

ITALY

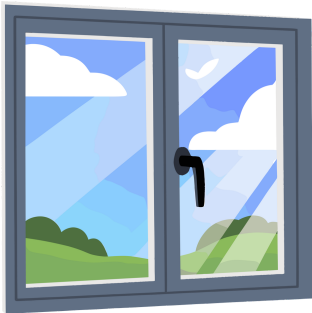


Legislative framework

The **2015 Italian Ministerial Decree** defines strict minimum requirements for new buildings and major renovations.

Solar factor integration

- Applies to buildings ongoing **energy efficiency upgrades** or **renovations**
- Solar gains are quantified as part of the calculations for **heating and cooling demand**
- Considers total solar energy transmittance of **windows**



Solar factor requirements

The Decree sets a **maximum g-value of 0.35** for all glazed components with orientation from East to West via South.

Why is it good?

- The solar factor requirement is intended to address issues of **summer comfort by minimising risks of overheating**
- The most **relevant orientations** are prioritised to maximise the benefits

Impact on glazing

The g-value requirement allows a shift from purely thermal insulation (U-value) to **combined thermal and solar performance design**.

ENGLAND

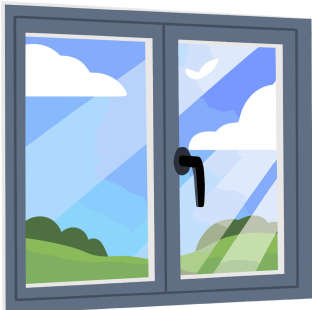


Legislative framework

The **Approved Document O** is part of the updated Building Regulation which took effect in 2022. It sets standards for limiting unwanted solar gains in summer, and providing an adequate means to remove heat from the indoor environment.

Solar factor integration

- Applies to **new residential buildings in high-risk locations**
- Solar factor is **considered for both the simplified method and the alternative dynamic model**



Solar factor requirements

The Regulation recommends a **maximum g-value of 0.40 for glazed areas** facing between north-east and north-west via the south, with a minimum light transmittance of 0.70.

Why is it good?

- Sets a minimum light transmittance to **ensure adequate daylight**
- Acknowledges that **limiting glazing areas is not an option** as it will impact winter solar gains and therefore increase the need for space heating

Impact on glazing

The g-value is one of the factors considered when a designer wants to **maximise the glazed area** (e.g. to **allow more daylight in** or for **aesthetic reasons**).

The low g-value (≤ 0.40) for glazed areas serves as a substitute for physical shading elements in high-risk locations.

SPAIN

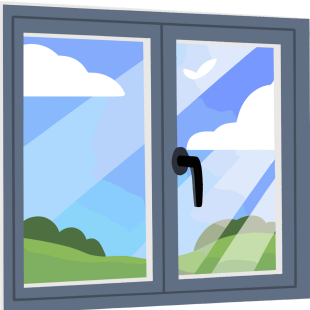


Legislative framework

The **Código Técnico De La Edificación (Dic-2019) Db-He Ahorro De Energía** establishes the rules and procedures for meeting the basic energy-saving requirement. It includes a focus on solar factor and the thermal insulation of the envelope.

Solar factor integration

- Applies to **new building** and **major renovations**
- Solar factor is integrated in the **calculations on the performance** of the thermal envelope



Solar factor requirements

A building envelop solar control indicator expressed by a factor $q_{sol;jul}$ is set at **2.00** for **residential buildings** and at **4.00** for **other buildings**.

Why is it good?

- Different solar radiation values to be considered according to defined winter and summer climate zones

Impact on glazing

Energy demand (q_{sol}) takes glazing and shading devices into account as a system.

The calculation software allows to compute **glazing with a specific g-value and U value**.

GREECE

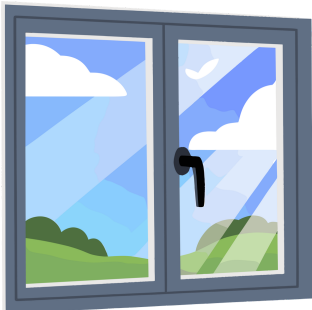


Legislative framework

The Regulation on the Energy Performance of Buildings (**KENAK**) transposes the European legislation. A new update is currently in the works.

Solar factor integration

- Integrates solar gains through glazing into an **energy performance-based calculation**
- Applies to **all new buildings** and **existing buildings undergoing major renovation**



Solar factor requirements

The primary energy consumption must not exceed that of a reference building with standardised envelope parameters, as defined per climate zone. This **calculation considers the glazing U-value and g-value.**

Why is it good?

- Solar gains from glazing are **balanced against heating season passive solar benefits**, which is particularly important in Greece's mixed climate (cold northern winters, hot southern summers)

Impact on glazing

Regulates the size of windows to **ensure lighting and comfort** conditions which simultaneously affects the building's energy performance.

PORTUGAL

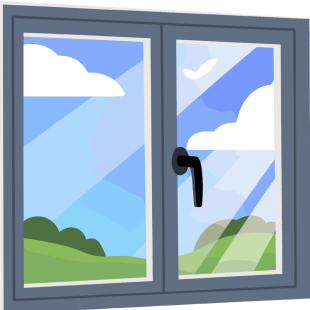


Legislative framework

The **Ordinance 379-A/2015**, updated the technical parameters of the Residential Buildings Energy Performance Regulation.

Solar factor integration

- Applies to all **new and renovated residential buildings**
- Three zones are set based on a **summer severity index**. Each zone has **solar gain limits**



Solar factor requirements

The Ordinance sets a **maximum g-value** which ranges from **0.10** in **southern zones** to **0.50** in the **northern zone**.

Why is it good?

- Separating winter and summer climate classifications allows the regulation to **target the g-value restriction precisely**
- Sets **compliance target**, reducing interpretation uncertainty

Impact on glazing

The legislation takes into account glazing and shading devices as a system. The **size of the glazing** must be considered when making calculations. In some cases, compliance with the requirements is possible **only through the use of solar control glazing**.