



PERFORMANCE
CALCULATOR



Fairdeal Windows

Make-up Name	Glass 1 & Coating	Glass 2 & Coating	Visible Light			Ultraviolet	Solar Energy							Thermal Properties
			Transmittance	Reflectance		Trans UV (τ_{UV} %)	Transmittance	Reflectance		Absorptance	Solar Factor (g%)	Shading Coefficient (sc)	Secondary Heat Transfer (q_i)	U-Value
				Visible (τ_v %)	ρ_v % out			ρ_v % in	Solar (τ_E %)					ρ_E % out
28mm double glazed unit with argon, ecopane	Guardian ExtraClear (CE)	ClimaGuard® A+ (CE) on Guardian ExtraClear (CE)	81.7	12.9	12.9	28.5	62.8	21.8	20.4	15.4	70.5	0.81	7.7	1.2
28mm double glazed unit with argon, ecoplus	Guardian ExtraClear (CE)	ClimaGuard® A 1.0 (CE) on Guardian ExtraClear (CE)	69.6	20.4	23.1	24.7	45.7	36.4	37.2	18.0	54.6	0.63	8.9	1.1
36mm triple glazed unit with argon, ecopane	ClimaGuard® A+ (CE) on Guardian ExtraClear (CE)	Guardian ExtraClear (CE)	73.9	16.6	16.6	14.3	50.5	25.0	25.0	24.5	58.1	0.67	7.6	0.9
36mm double glazed unit with argon, ecoplus	ClimaGuard® A 1.0 (CE) on Guardian ExtraClear (CE)	Guardian ExtraClear (CE)	54.5	30.4	30.4	9.8	30.9	43.3	43.3	25.8	38.0	0.44	7.1	0.8

Calculation Standard: EN 410:2011 / EN 673:2011



Important Notes

Calculations and terms in this report are based on EN 410:2011/EN 673:2011. The performance values shown above represent nominal values for the center of glass with no spacer system or framing. Solar Factor (g) and Secondary Heat Transfer (q_i) are not available for sloped glazing, as no calculation method is prescribed by the standard for these attributes.

The KIWA logo and KIWA Validation Report MD - 14/477/GL are provided as evidence of validation of the Guardian Performance Calculator software, program version 4.1, for execution of calculations of luminous and solar characteristics of glazing and thermal transmittance, according to EN 410:2011 and EN 673:2011.

Laminated products:

The Performance Calculator allows the user to model a wide variety of laminated glass makeups using different float glass substrates, coatings and interlayer material, including those makeups where the coating faces the interlayer. It is the user's responsibility to assess whether the laminated glass makeup meets relevant regional standards and complies with applicable laminated glass safety regulations.

In addition, when the laminated glass makeup includes a coating facing the interlayer material, there may be a loss of thermal insulation performance and a color change compared to non-embedded coated glass.

Non-specular products (translucent or diffuse):

The performance measurement for non-specular (translucent or diffuse) materials such as translucent interlayers or acid etched glass surface, or surface with ceramic frit is limited by the current experimental technologies. Since measurements capture physically only a part of the resulting radiation, calculated performance results provided herein and based on such measurements are not compliant with any standard (including EN 410) and may only be used as a general reference. Actual values may vary significantly based upon exact fabrication process, as well as type, thickness and color of used non-specular material.

Explanation of Terms according to EN 410:2011/EN 673:2011

Visible Light Transmittance (T_v, %) is the percentage of incident light in the wavelength range of 380 nm to 780 nm that is transmitted by the glass.

Ultraviolet (UV) Transmittance (T_{uv}, %) is the percentage of the incident UV component of the solar radiation in the wavelength range of 280 nm to 380 nm that is transmitted by the glass.

Solar Energy Direct Transmittance (T_e, %) is the percentage of incident solar energy in the wavelength range of 300 nm to 2500 nm that is directly transmitted by the glass.

Visible Light Reflectance Outdoors/Indoor (R_{v out/in}, %) is the percentage of incident visible light directly reflected by the glass.

Solar Direct Reflectance Outdoors/Indoors (R_{e out/in}, %) is the percentage of incident solar energy directly reflected by the glass.

Solar Energy Absorptance (A_e, %) is the percentage of the sun's energy that is absorbed by glass.

U-Value (U_g, W/m² K) is the glazing parameter that characterizes the heat transfer through the central part of the glazing, i.e. without edge effects, and expresses the steady-state density of heat transfer rate per temperature difference between the environmental temperatures on each side. Temperature differential according to standard conditions: T=15K°. The lower the value, the greater is the insulating value. EN 673 defines the value with 1 decimal place. The value is also provided with 3 decimal places for informational purposes.

Solar Factor or Total Solar Energy Transmittance or g-value (g%) is the total solar radiation transmitted by the glass.

Secondary Heat Transfer Coefficient (q_i) is the result of heat transfer by convection and longwave IR-radiation of that part of the incident solar radiation which has been absorbed by the glazing.

Colour Rendering Index in transmission, D65 (R_a) is the change in colour of an object as a result of the light being transmitted through the glass.