

Glass Performance Parameters

Technical Performance Report — Laminated IGU Systems

Report Reference	IPH/KC/R1/2026
Prepared by	IPH Glasses Mahavir Glass Enterprise
Calculation Standard	NFRC 200:2010
Date	June 2026
Glass Supplier	Guardian Glass (India)
Application	Architectural / Façade — Laminated IGU

1. Overview

IPH Glasses provides complete glass performance data to all clients and design partners as part of our technical advisory service. The performance values presented in this report have been generated using the Guardian Glass Performance Calculator (v4.1.0, Database 20251118) under NFRC 200:2010 and represent nominal centre-of-glass values for the make-ups listed below. These values are provided to enable architects, consultants, and building owners to make informed glazing decisions.

2. Performance Summary — Laminated IGU Configurations

Make-up	Glass Build-up	VT τv (%)	Rv Out (%)	Rv In (%)	CRI (Ra)	Solar Trans (%)	Re Out (%)	SHGC	U-Value (W/m²K)	LSG
HP Neutral 70 36mm Lam-IGU	8mm Clear + SG HP N70 16mm Air 5+0.76PVB+5mm Lam	67	11	11	91.3	37	15	0.49	1.620	1.36
Solar Plus Clear 65 36mm Lam-IGU	10mm Clear + SG SP C65 16mm Air 5+0.76PVB+5mm Lam	56	13	11	88.9	30	11	0.42	2.130	1.33
Solar Plus Neutral 45 36mm Lam-IGU	8mm Clear + SG SP N45 16mm Air 5+0.76PVB+5mm Lam	37	17	12	86.3	18	21	0.27	1.895	1.36

Coating position: Surface 2 (exterior face of outer lite) for all configurations. All values are centre-of-glass. Calculation standard: NFRC 200:2010.

3. Glass Construction Detail

A. Laminated IGU 36mm — SunGuard® HP Neutral 70

Total Unit Thickness	34.762 mm (nominal)
Glazing Weight	45.8 kg/m²
Layer	Specification
Glass 1 (Outdoor)	8 mm Guardian Clear Glass (India)
Coating — Surface 2	SunGuard® HP Neutral 70 (India)
Gap 1	16 mm 100% Air
Glass 2	5 mm Guardian Clear Glass (India)
Interlayer 1	0.030" (0.76 mm) Clear PVB
Glass 3 (Indoor)	5 mm Guardian Clear Glass (India)

Performance Note: High visible light transmission (67%) with moderate SHGC (0.49). Ideal for facades requiring good daylighting while controlling solar heat gain. LSG of 1.36.

B. Laminated IGU 36mm — SunGuard® Solar Plus Clear 65	
Total Unit Thickness	36.762 mm (nominal)
Glazing Weight	50.79 kg/m²
Layer	Specification
Glass 1 (Outdoor)	10 mm Guardian Clear Glass (India)
Coating — Surface 2	SunGuard® Solar Plus Clear 65 (India)
Gap 1	16 mm 100% Air
Glass 2	5 mm Guardian Clear Glass (India)
Interlayer 1	0.030" (0.76 mm) Clear PVB
Glass 3 (Indoor)	5 mm Guardian Clear Glass (India)

Performance Note: Balanced solar control with VLT of 56% and low SHGC (0.42). Suited to east/west facades in warm climates. LSG of 1.33.

C. Laminated IGU 36mm — SunGuard® Solar Plus Neutral 45	
Total Unit Thickness	34.762 mm (nominal)
Glazing Weight	45.8 kg/m²
Layer	Specification
Glass 1 (Outdoor)	8 mm Guardian Clear Glass (India)
Coating — Surface 2	SunGuard® Solar Plus Neutral 45 (India)
Gap 1	16 mm 100% Air
Glass 2	5 mm Guardian Clear Glass (India)
Interlayer 1	0.030" (0.76 mm) Clear PVB
Glass 3 (Indoor)	5 mm Guardian Clear Glass (India)

Performance Note: Maximum solar control: SHGC 0.27, lowest heat gain of all three options. Suited to south and west facades with high solar exposure. LSG 1.36.

4. Comparative Performance Overview			
Parameter	HP Neutral 70	SP Clear 65	SP Neutral 45
Visible Light Transmittance (VLT)	67%	56%	37%
Solar Heat Gain Coefficient (SHGC)	0.49	0.42	0.27
U-Value (W/m²K)	1.620	2.130	1.895
Light-to-Solar Gain (LSG)	1.36	1.33	1.36
Solar Transmittance (τe)	37%	30%	18%
Reflectance Outdoors (Rv Out)	11%	13%	17%
Color Rendering Index (Ra)	91.3	88.9	86.3
Glazing Weight (kg/m²)	45.8	50.79	45.8

5. Explanation of Key Terms	
VLT — Visible Light Transmittance (τv, %): Percentage of incident light (380–780 nm) transmitted through the glass.	

SHGC — Solar Heat Gain Coefficient: Sum of solar direct transmittance and secondary heat transfer inward. Lower values mean less heat entering the building.

U-Value (W/m^2K): Heat transfer rate per unit area per degree of temperature difference (centre-of-glass, no edge or frame effects).

LSG — Light-to-Solar Gain: Ratio of VLT to SHGC. Higher values indicate better balance of light admission vs solar heat control.

CRI (Ra): Color Rendering Index in transmission — indicates how natural colours appear through the glass.

Solar Transmittance (τ_e , %): Percentage of incident solar energy (300–2500 nm) directly transmitted by the glass.

Reflectance (R_v / R_e): Percentage of visible light or solar energy directly reflected outward or inward by the glazing unit.

6. Notes & Disclaimer

All performance values are nominal centre-of-glass values derived from the Guardian Glass Performance Calculator (NFRC 200:2010). Values do not account for edge effects, spacer systems, or framing. Actual installed performance may vary based on glass size, orientation, shading, installation method, and climatic conditions. IPH Glasses recommends full-size mock-up approval for critical or high-performance applications. This report is provided for informational and design-advisory purposes. Specifications should be confirmed prior to order placement.