

FacadeMatrix

GLASS PERFORMANCE CALCULATOR

SAMPLE REPORT

SHGC · U-value · VLT Compliance · ECBC 2017 · NBC 2016

REPORT REFERENCE

SR-GLASS-001

26 May 2026

Reference Case

Bengaluru · Composite Zone · South Elevation · WWR 25% · DGU Low-E

This sample report is generated for demonstration purposes only. All values correspond to a representative glazing specification for a commercial office building in Bengaluru. FacadeMatrix accepts no liability for design decisions made using this sample. Engineers must independently verify all values before use in any submission.

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Project & Site Parameters

Project name	Sample Commercial Tower
Location	Bengaluru, Karnataka
ECBC 2017 Climate Zone	Composite
Building typology	Commercial Office
Floor area (approx.)	35,000 sq ft (GFA)
Green rating target	IGBC Gold
Facade system	Unitised Curtain Wall (UCW) — DGU
Window-to-Wall Ratio (WWR)	25% (South elevation)
Orientation analysed	South elevation (worst SHGC case)

Glass Specification

Glass type	Double Glazed Unit (DGU)
Outer pane	6 mm SGG Cool-Lite ST 120 — Sterling Silver (coated, face 2)
Cavity	12 mm — Argon filled (90% purity)
Inner pane	6 mm SGG Planilux (clear float)
Total build-up	6 / 12 Ar / 6 (24 mm overall)
Coating type	Hard coat solar control — Low-E
Manufacturer	Saint-Gobain India
Performance standard	EN 410 / EN 673 (Saint-Gobain India SGG Infinity brochure 2020)

Code & Standard References

Energy code	ECBC 2017 — Energy Conservation Building Code
Building code	NBC 2016 — National Building Code of India
Green rating	IGBC Green Homes / Green New Buildings v3
Glass performance	EN 410:2011 — luminous and solar characteristics
Thermal transmittance	EN 673:2011 — U-value calculation
SHGC basis	EN 410 solar factor g-value (ECBC 2017 §5.3 permits EN values)
Wind load	IS 875 Part 3:2015 — design wind pressure
Glass design	IS 2553 Part 1:2018 — safety glazing requirements

Glass Performance Properties

SHGC (EN solar factor g-value)	0.29
U-value (centre of glass, EN 673)	1.6 W/m ² K
Visible Light Transmittance (VLT)	0.20 (20%)
External light reflectance	0.32 (32%)
Shading Coefficient (SC)	0.33
Light-to-Solar Gain ratio (LSG)	0.69 (VLT / SHGC = 0.20 / 0.29)

Solar Heat Gain at 1.0 kW/m ²	13.1 W/m ² (preliminary estimate)
Source	Saint-Gobain India SGG Infinity brochure 2020 · EN 410 / EN 673

ECBC 2017 Compliance Check — Composite Zone (Bengaluru)

ECBC 2017 prescriptive envelope requirements for Composite climate zone. South elevation with WWR 25%.

Parameter	Required (ECBC 2017)	Proposed	Margin	Result
SHGC — South elevation	≤ 0.25	0.29	+0.04 (exceeds limit)	FAIL
U-value (glazing)	≤ 3.30 W/m ² K	1.6 W/m ² K	1.70 W/m ² K headroom	PASS
VLT (minimum)	≥ 0.27	0.20	-0.07 (below limit)	FAIL
WWR — South	≤ 25%	25%	At limit	PASS

Compliance Result: SHGC and VLT do not meet ECBC 2017 prescriptive requirements for the Composite zone, South elevation.

The SHGC of 0.29 exceeds the ECBC 2017 limit of 0.25 for south-facing glazing in Composite zones. The VLT of 0.20 falls below the minimum 0.27 threshold. Two compliance pathways are available: (1) substitute with a higher-VLT, lower-SHGC glass such as SGG Envision SKN 144 Iris (SHGC 0.22, VLT 0.41) which meets both limits, or (2) pursue the ECBC 2017 trade-off path (whole-building energy simulation) demonstrating equivalent overall energy performance.

Alternative Glass Comparison — ECBC 2017 Compliant Options

Glass Product	SHGC	VLT	U-value	ECBC 2017 South
SGG Cool-Lite ST 120 (proposed)	0.29	0.20	1.6 W/m ² K	FAIL
SGG Envision SKN 144 Iris	0.22	0.41	1.6 W/m ² K	PASS
SGG Nano KT 140 Icy Menthol	0.29	0.37	1.8 W/m ² K	FAIL

SGG Envision SKN 144 Iris (DGU 6/12Ar/6) meets both SHGC and VLT requirements with SHGC 0.22 (NFRC) and VLT 0.41 (EN 410). Source: Saint-Gobain India "The Essential — India" portfolio Nov 2025.

Results Summary

Glass specification	6 mm Cool-Lite ST 120 / 12 mm Ar / 6 mm Planilux
SHGC (EN solar factor)	0.29 — EXCEEDS ECBC 2017 limit of 0.25 (South)
U-value (EN 673)	1.6 W/m ² K — COMPLIANT (limit: 3.30 W/m ² K)
VLT (EN 410)	0.20 — BELOW ECBC 2017 minimum of 0.27
WWR — South elevation	25% — COMPLIANT (limit: 25%)
Light-to-Solar Gain (LSG)	0.69
Overall ECBC 2017 compliance	NON-COMPLIANT — prescriptive path
Recommended alternative	SGG Envision SKN 144 Iris (SHGC 0.22 · VLT 0.41)

Design Recommendation

Substitute SGG Cool-Lite ST 120 with SGG Envision SKN 144 Iris (DGU 6 mm coated face 2 / 12 mm argon / 6 mm clear) to achieve ECBC 2017 compliance on the South elevation. The Iris achieves SHGC 0.22 (NFRC) and VLT 0.41, meeting both the 0.25 SHGC and 0.27 VLT prescriptive limits for Composite zones. U-value of 1.6 W/m²K provides significant headroom against the 3.30 W/m²K limit. Confirm with Saint-Gobain India dealer for current availability and pricing.

Glass performance values from Saint-Gobain India SGG Infinity brochure (2020) and "The Essential — India" portfolio (Nov 2025) per EN 410 / EN 673. ECBC 2017 §5.3 permits EN-based values where NFRC is unavailable, provided the standard is disclosed. These outputs are preliminary screens — not a substitute for project-specific compliance documentation. FacadeMatrix · facadematrix.com · SR-GLASS-001 · 26 May 2026