TECHENGY

SOLAR ROOFING · INTERIOR SURFACES · ACCRA

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DATA SHEET — BIPV SOLAR SHINGLE TILE

A photovoltaic roofing tile that replaces conventional roof sheeting: monocrystalline cells laminated under low-iron tempered glass in a metal-shingle profile, wired as standard roof-integrated strings. Three colour routes are offered (page 2). All values below are Techengy specification values for this certified platform; project-specific figures are confirmed on samples and in the written quotation.



1 MODELS AND COLOUR ROUTES

Model	Construction	Pmax	Availability
TG-SS-80B	All-black tile (black glass, black bottom)	**80 W**	Stock platform
TG-SS-80CB	Black solar glass + coloured bottom surround	**80 W**	Same price as black
TG-SS-65R	Whole-tile red (red glass + red bottom)	**65 W**	MOQ + extra cost
TG-SS-G	Green — any construction	—	Sample production only

Whole-tile red carries a −18.8 % power penalty versus black (65/80 W). Coloured-bottom route carries no penalty. Green has no STC data or model code until a sample is produced.

2 ELECTRICAL PARAMETERS AT STC (1000 W/m², 25 °C, AM1.5)

Parameter	TG-SS-80B	TG-SS-80CB	TG-SS-65R
Maximum power Pmax	**80 W**	**80 W**	**65 W**
Module efficiency*	19.4 %	19.4 %	15.7 %
Voltage at Pmax (Vmpp)	14.30 V	14.30 V	14.55 V
Current at Pmax (Impp)	5.60 A	5.60 A	5.02 A
Open-circuit voltage (Voc)	17.60 V	17.60 V	17.53 V
Short-circuit current (Isc)	5.70 A	5.70 A	5.32 A

3 PHYSICAL

Property	Value
Tile dimensions	1340 × 420 mm
Exposed dimensions	1260 × 370 mm (see note +)
Weight	6.5 kg per tile
Solar cells	Monocrystalline 166 × 83 mm, 2 × 13 layout
Glass / encapsulant / back	Low-iron tempered 3.2 mm / EVA / backsheet
Junction box / cable / connector	IP67 or better / 900 mm, 4 mm² / MC4

4 THERMAL, OPERATING AND MECHANICAL

Property	Value
NOCT	45 ± 2 °C
Temperature coefficients	Pmax −0.36 %/°C · Voc −0.30 %/°C · Isc +0.05 %/°C
Operating temperature range	−40 °C to +85 °C
Max system voltage / series fuse	1500 V DC / 16 A
Static load front / back	5400 Pa (snow, wind) / 2400 Pa (wind)
Hailstone impact	25 mm at 23 m/s
Minimum roof slope	15° — slopes above 15° are sufficient and no corrector is required; project pitch 32° complies

Techengy specification values for the certified platform — confirmed on samples and in the written quotation. Not an offer.

5 COLOUR ROUTES AND INDICATIVE YIELD — PROJECT REFERENCE (934 TILES, 32° PITCH)

Route	Construction	Array	Indicative yield	vs black
K / R2	Black, or black glass + coloured bottom	**74.7 kWp**	**~108–123 MWh/yr**	No penalty
R1	Whole-tile red	60.7 kWp	~88–100 MWh/yr	−18.8 %
G	Green (sample route)	—	—	Unquantified

Reference yield 1,450–1,650 kWh/kWp/yr (southern Ghana). Yield scales with Pmax; colour-dependent thermal and low-light effects are second-order. Azimuth assignment of planes follows once the site north point is confirmed.

6 DESIGN RULES (TECHENGY INSTALLATION REQUIREMENTS)

- Minimum roof slope 15°; Techengy installation follows metal-roofing practice. A slope greater than 15° is sufficient and no corrector is needed. The project's 32° pitch complies with no pitch-related output derating.
- Shading affects the entire series string — the impact falls on the affected string, so every series string must lie on one orientation and one slope. Strings are grouped plane-by-plane on hip and pyramid roofs.
- Colour variants must not be mixed within a series string (different Vmpp/Impp). One colour per plane.
- String plan, MPPT allocation and plane-level shading study are issued with the engineering drawings.

7 CERTIFICATION AND WARRANTY

Item	Status
Platform certification	IEC 61215 · IEC 61730 · 3C · ISO 9001:2015 · ISO 14001:2015 · ISO 45001:2018
TUV / CE	Held for the product line; certificate copies with model and colour scope available on request
Test basis	All published specifications are laboratory test data
Fire rating	Class A
Output warranty	> 80 % of Pmax after 20 years — bound into the contract warranty per colour, with year-1 value and annual slope
Service life	> 30 years

8 DATA STATUS — DISCLOSED GAPS

Item	Status
Spectral reflectance / transmittance	Pending; to be issued with the yield-modelling package
IAM curves	Pending; modelling assumes standard low-iron glass IAM for black, red carrying −18.8 %
Low-irradiance behaviour	Generation in low light confirmed on the platform; measurable irradiance table to follow
Green tile	No STC data or model code; sample-production request (MOQ, cost, lead time)
Exposed-size ruling +	Datasheet 1260 × 370 mm vs project layout 1290 × 370 mm — ruling pending; tile counts follow the project layout
Batch certification	Per-batch certified flash-test certificates accompany delivery

* Module efficiency measured on the certified platform; area basis per the laboratory report. + Exposed size affects covered area per tile by ~2.3 %; the project tile count (934) follows the roof-layout take-off.

Techengy specification values for the certified platform — confirmed on samples and in the written quotation. Not an offer.