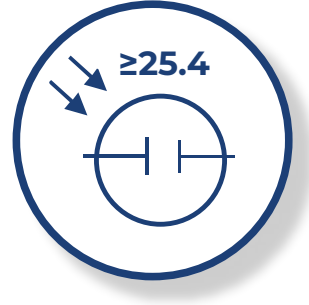
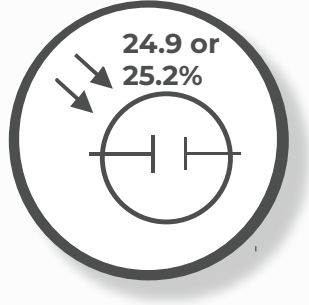
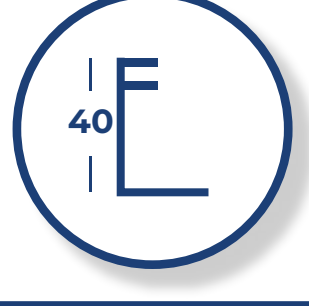
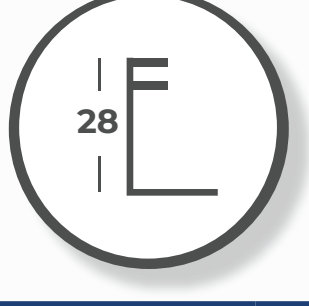

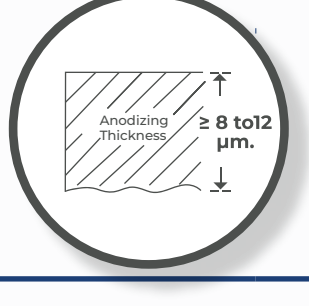

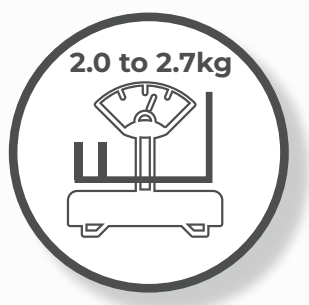
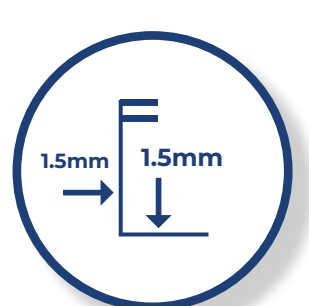
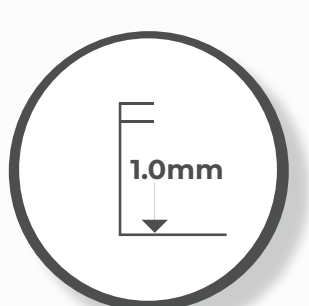


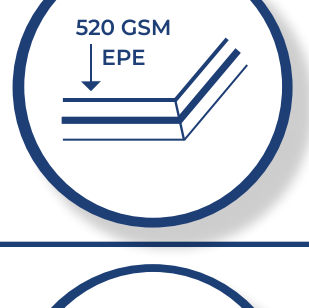
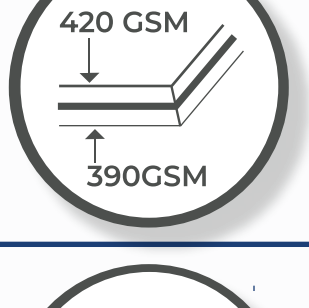
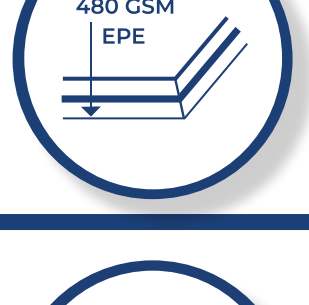
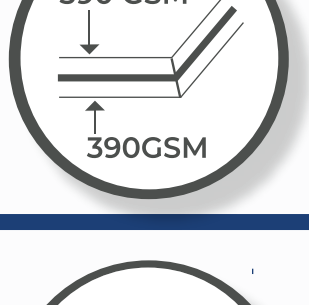
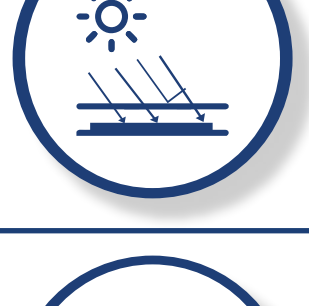
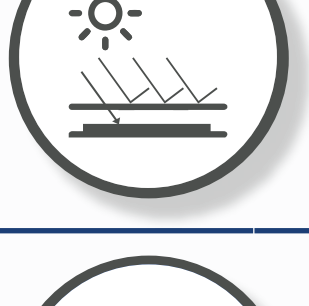
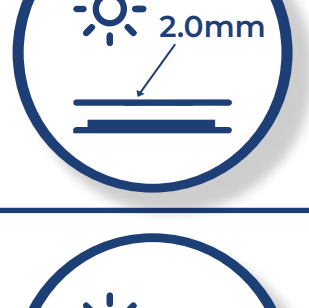
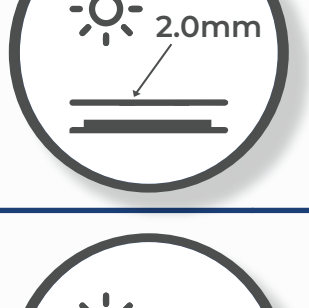
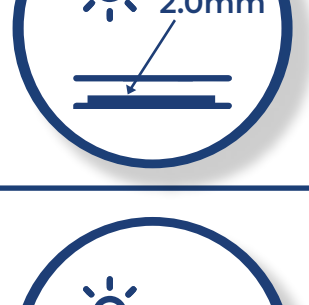
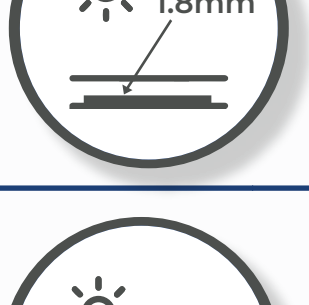
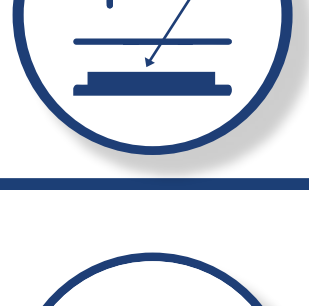
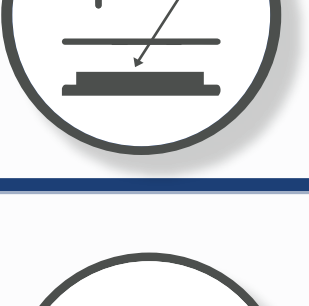
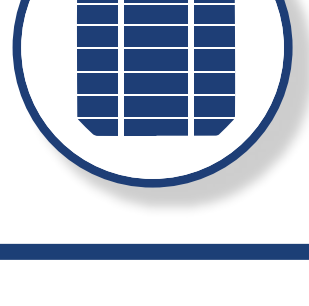
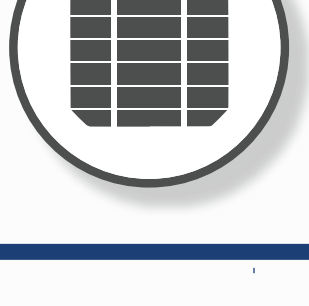






WHY PAHAL SOLAR?

Clarity in Comparison, Confidence in Performance

N-TYPE TOPCon G12R

Description	Pahal Solar Module		Other Module Manufacturer		Impact/Effect
Cell		Cell efficiency $\geq 25.5\%$.		Cell efficiency 24.9% to 25.2% .	Usage of high-quality A-grade cells improves generation.
					Longer module lifespan against UV, high temperature, and weathering.
Aluminium Frame		40mm frame height.		28-35mm frame height.	Lower height reduces mechanical strength.
		Anodizing thickness $\geq 15\mu\text{m}$.		Anodizing $\leq 8-12\mu\text{m}$.	Less anodizing increases rust risk over time period.
		Frame set weight $\geq 3\text{kg}$. *		Frame set weight 2.0-2.7kg .	Lower weight reduces module strength—micro-cracks due to bending, resulting in decreasing generation.
		Frame thickness 1.5mm ($\pm 0.2\text{mm}$) .		Thickness 1.0-1.2mm ($\pm 0.2\text{mm}$) .	Thinner frame reduces structural strength against wind load .
Encapsulant (EPE)		Higher GSM EPE used.		Lower GSM used.	Lower GSM increases hotspot risk over time period.
		Front: 520 GSM .		420 GSM EPE front and 390 GSM EPE back.	Moisture penetration causes de-lamination .
		Back: 480 GSM .		390 GSM EPE front and 390 GSM EVA back.	Lower GSM leads to faster de-gradation .
Solar Glass		HTAR (High Transmission Anti-Reflective) coated glass.		ARC (Anti-Reflective Coated) glass.	HTAR glass lets 0.4-0.5% more photons through, resulting in improving generation.
		Front: 2.0mm thick.		Front: 2.0mm thick.	HTAR coating is stronger and more UV resistant .
		Back: 2.0mm thick.		Back: 1.8mm thick.	
		Back side white grid printed glass .		No grid printing.	White grid returns photons to the cell, boosting generation .
Ribbon		High quality PV Ribbon \varnothing 0.26mm .		Ribbon \varnothing 0.24mm .	Thinner ribbon increases resistance and voltage drop , reducing power output .
Production Line		100% AI-based latest advanced technology.		AI technology is generally not used in the manufacturing process.	AI technology based manufacturing improve solar panel quality .
Research & Development (R&D)		State of the art in-house R&D laboratory.		Limited R & D Infrastructure.	Ongoing research enables top-quality module supply in the market .
					Strict testing ensures long-term module quality .

• The materials may change due to technology and other reasons as required. * Depends on frame thickness 1.5mm ($\pm 0.2\text{mm}$).

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