

SOLAR PANELS AND EXTREME ENVIRONMENTS

Some considerations of extreme environments have always been around. Others are growing in importance due to climate changes. Graph 1 summarises a recent survey conducted on the Top 20 solar panel brands in Australia with respect to the extreme environments they can handle.¹

COASTAL ENVIRONMENTS

Salty ocean mist wreaks havoc on most building materials. Conventional panels aren't spared. Only 6 of the top 20 panels have been independently tested and accredited for **IEC61701** Salt Mist Corrosion - a mere 30%. If you live near beaches or salty inland areas, be aware.

SIDE NOTE: A recent product warranty survey of the top conventional panels could not find one that specifically states they're covered in saline environments.¹

FARMS

For agricultural settings you'll need to look for **IEC62816** Ammonia Corrosion certification. Please note only one quarter (5) of the top 20 panel solar brands surveyed listed this accreditation on their data sheet.¹

AGGRESSIVE GASES

Industrial gases and acid rain can cause major damage to solar panels not designed to withstand such conditions. SunPower panels have been tested and passed,.

WEATHER

Temperature extremes - from the coldest nights to the hottest days - can damage conventional panels, most notably causing solar wafer cracking. SunPower panels have been independently tested to receive **IEC60068-2-68** certification, covering this.

SANDSTORMS

The combination of sand and high winds in desert environments can cause serious abrasion, damaging solar panels and permanently deteriorating performance levels. The US Army has independently tested SunPower panels and certified them with its **MIL-STD-810G** rating covering this.

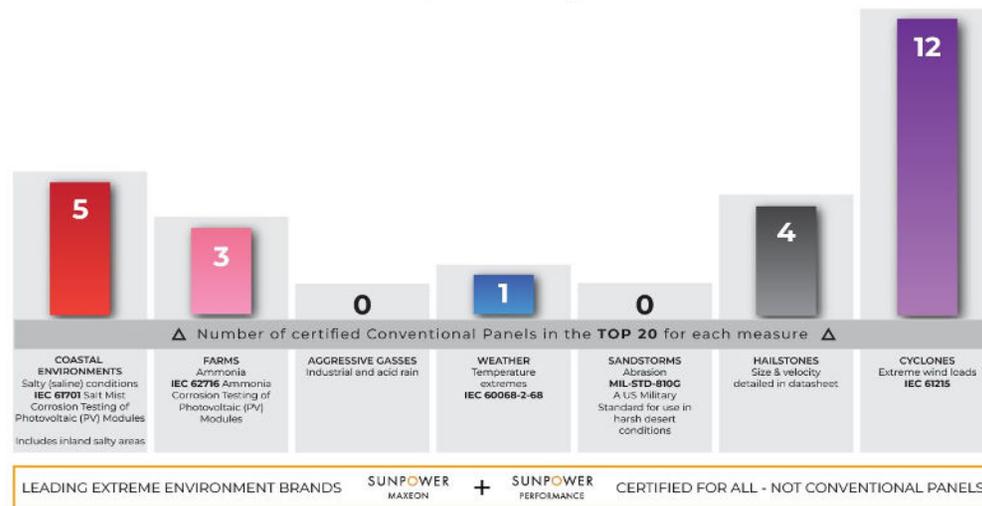
CYCLONES

High wind loads put extreme stress on solar panels and roof fixing equipment. Cyclones are more common in coastal Northern Australia, but from time to time Southern Australia can be hit with extreme weather with extreme winds. The independent testing accreditation in this area is **IEC61215** - 8 of the 20 top solar panels surveyed have this certification.¹

TOP 20 SOLAR PANELS GRAPH 1

Panel Brands Designed to Handle Extreme Environments

Referring to CEC Enhanced Listings and published independent testing
Based on brands best selling model**



* 2023 survey conducted by Energy Buster

** Information sourced from solar panel data sheets

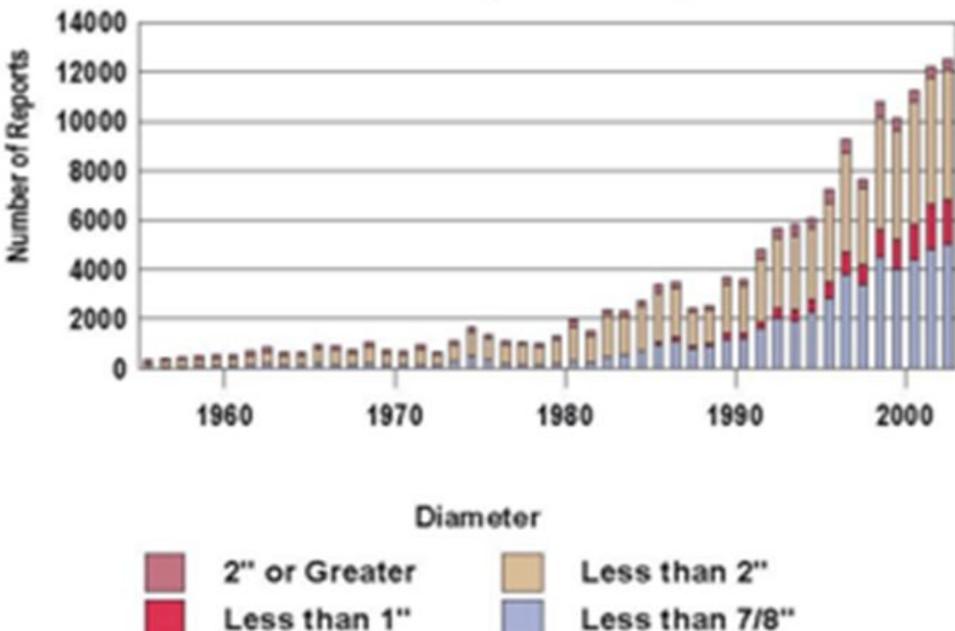


HAILSTONE DAMAGED CONVENTIONAL PANELS

1. Energy Buster 2023 survey

3/4" and Larger Hail Reports

GRAPH 2



SUNPOWER PANELS HAVE "ENHANCED LISTINGS" WITH THE CEC

MODEL NUMBER	ENHANCED LISTINGS	APPROVAL DATE	EXPIRY DATE	CERTIF NUMBER
SPR-P6-495-COM-S-BF	IEC 62804 PID resistance IEC 61701 Salt mist resistance IEC 62716 Ammonia resistance	05/09/2022	26/07/2025	PV50497135
SPR-P6-500-COM-S-BF	IEC 62804 PID resistance IEC 61701 Salt mist resistance IEC 62716 Ammonia resistance	05/09/2022	26/07/2025	PV50497135
SPR-P6-540-COM-M-BF	IEC 62804 PID resistance IEC 61701 Salt mist resistance IEC 62716 Ammonia resistance LETID resistance	08/04/2022	08/04/2025	PV 50497135
SPR-P6-545-COM-M-BF	IEC 62804 PID resistance IEC 61701 Salt mist resistance IEC 62716 Ammonia resistance LETID resistance	08/04/2022	08/04/2025	PV 50497135
SPR-MAX3-410-BLK	IEC 62804 PID resistance IEC 61701 Salt mist resistance IEC 62716 Ammonia resistance LETID resistance	08/04/2022	08/04/2025	PV 60152450
SPR-MAX3-415-BLK	IEC 62804 PID resistance IEC 61701 Salt mist resistance IEC 62716 Ammonia resistance LETID resistance	08/04/2022	08/04/2025	PV 60152450
SPR-MAX3-420-BLK	IEC 62804 PID resistance IEC 61701 Salt mist resistance IEC 62716 Ammonia resistance LETID resistance	08/04/2022	08/04/2025	PV 60152450

HAILSTONES

Around the world both the size and frequency of hail is increasing, as illustrated in Graph 2. Only 6 of the top 20 panel brands mention what level of hailstones their panels can withstand¹ - in terms of size (diameter mm) and velocity (m/s).

In future, insurance companies may make hailstone damage claims more difficult if claim volumes increase. **Prior to purchasing solar panels, be aware of the hailstone issue and know what your chosen panels can handle.**

Some cheaper panels have thinner glass with lower levels of hardness. Thicker, more resilient glass costs a lot more. Also some solar panel manufacturers are trending towards bi-facial designs (glass-on-glass) with even thinner glass both sides.

FUTURE PROOFING

The importance of extreme environments will only increase as a decision criteria for solar panels. **Know your environment well and ensure your chosen panel has independent accreditation for your conditions.**

Cheaper solar panels most likely won't have capability to withstand most of the extreme environments listed above (to have these attributes requires more expensive materials, testing and independent certification).

SunPower panels are the only ones with certification for all seven extreme environments reviewed. Energy Buster exclusively support and recommend them.



1. Energy Buster 2023 survey