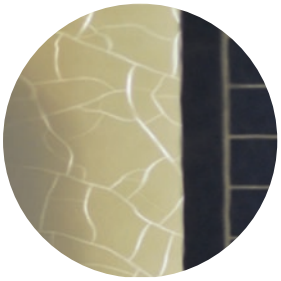
Inner-layer cracking

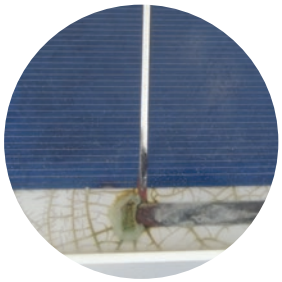
Inner-layer cracks were observed in multiple backsheet inner layers.

- These propagate through the module's polyester core.
- They are frequently encountered in FEVE and PET backsheets.
- They directly impact power and can cause delayed inverter starts, ground faults, and fires.



PET
6 years
Texas, USA

PET
6 years
Xining, China



FEVE
7.5 years
India

FEVE
8 years
Arizona, USA

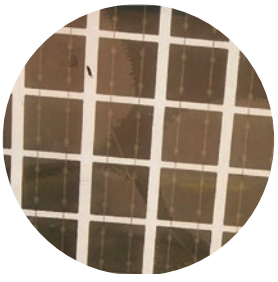
Glass backsheet defects

Delamination and cracking were observed in multiple glass backsheets.

- Delamination appears to originate near edges of a module or at individual cells.
- Cracks likely originate at scratches or chips on the glass surfaces and edges or at stress risers introduced by the racking system.

Glass/encapsulant delamination
8 years
West India

Delamination
9 years
SW USA



Delamination and cracking
10 years
SW USA

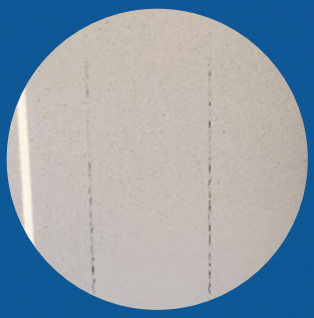
Delamination and corrosion
15 years
Southern China

Materials Matter™ when it comes to backsheets

Case study: France

A photovoltaic plant in France discovered that, after 8 years of use, performance of their modules was declining year over year and that many modules were displaying widespread backsheet cracking. This had led to a degradation of insulation resistance (IR) in the solar modules over time, leading to unsafe working conditions as a result of electrical hazards. All PA backsheets and 10% of PVDF backsheets exhibited cracking.

Widespread backsheet cracking
PVDF



Widespread backsheet cracking
PA

Case study: United States

One solar field in Arizona, USA utilized a mixed bill of materials. After 7 years of use, widespread cracking was found in PVDF backsheets. The entire field needed to replace modules in order to maintain operation and energy production and, as a result, sustained multimillion-dollar losses. No defects were observed in modules made with Tedlar® PVF-based backsheets.

Widespread backsheet cracking
PVDF

No defect
Tedlar® PVF

DUPONT™

To learn more about DuPont Photovoltaic Solutions, visit photovoltaics.dupont.com