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IEC TS 63209 Backsheet Testing Failures



Backsheet Durability Test Results:

IEC TS 63209 UV Sequence Provokes Failures in Past and Current Backsheets

Module polymeric backsheet cracking is a historical PV module field failure mode.

- Are module backsheet issues solved?
 - **NO**: Modern materials fail 63209 accelerated tests that correlate to 8-12 years of field stress.
- Is backsheet material-only testing sufficient?
 - **NO**: Backsheet failures are module construction-dependent. Encapsulant chemistry and thickness, cell interconnect topography and other factors affect backsheet durability.

Results:

AAA (Fielded ~ 8 years)



AAA (Manuf. 2013, 2 cycles 63209)



PVDF (Manuf. 2018, 2 cycles 63209)

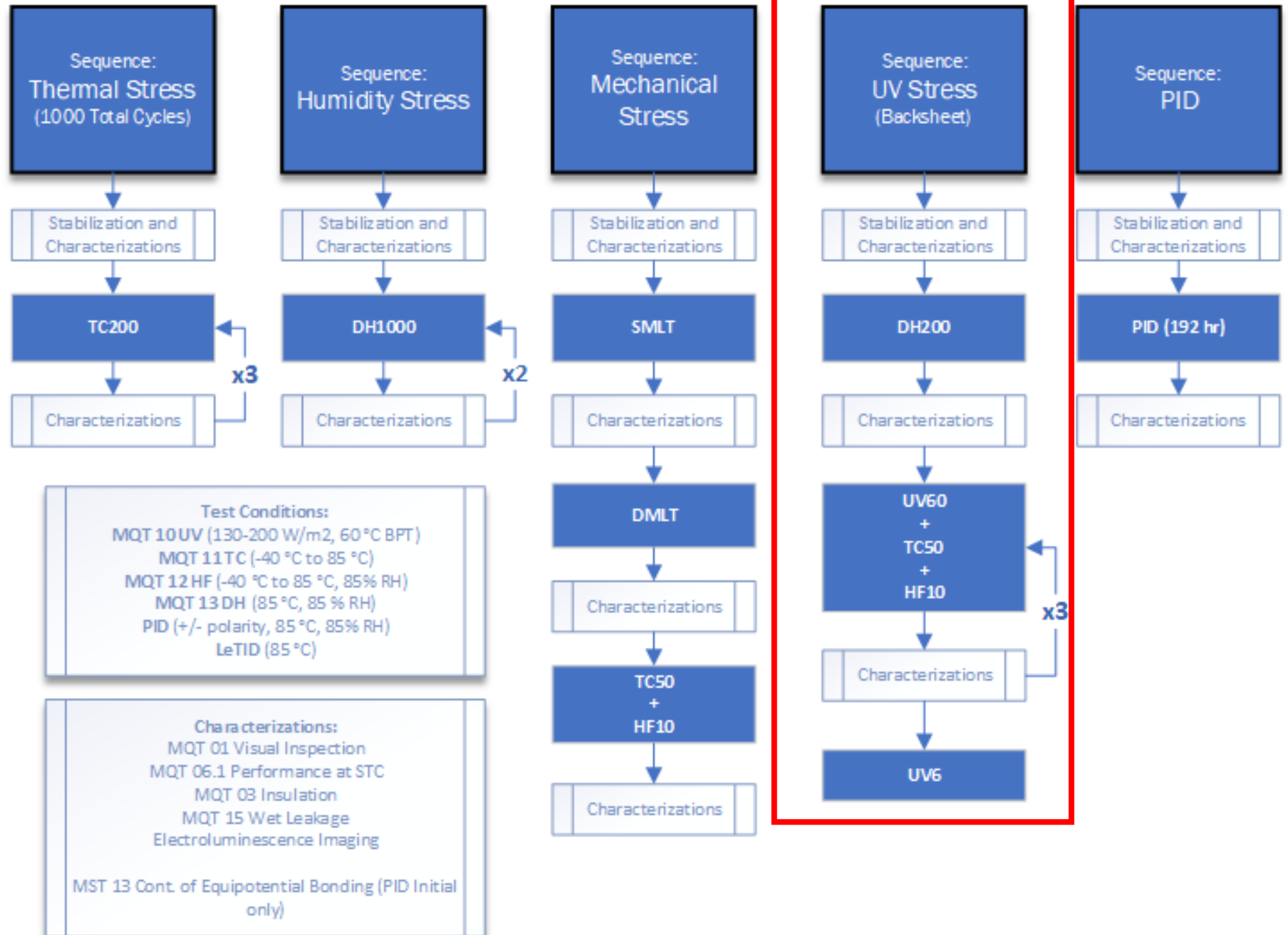


PVDF (Manuf. 2018, 3 cycles 63209)



IEC TS 63209 UV Backsheet Testing Sequence:

One Part of a
Comprehensive
Test Protocol

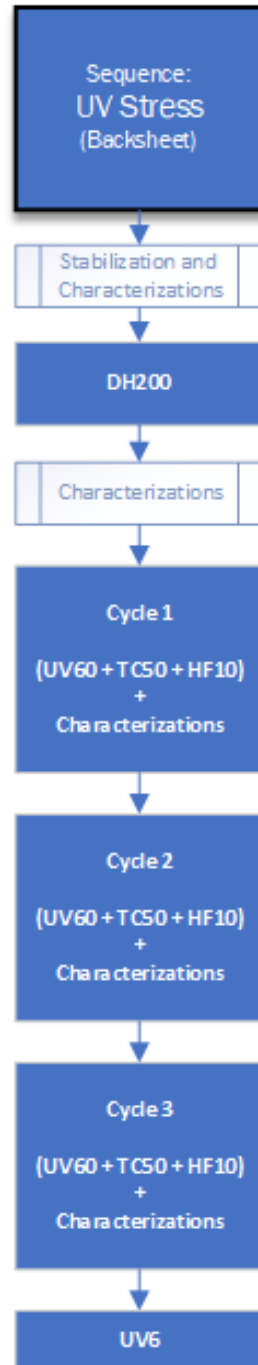


IEC TS 63209 UV Backsheet Testing Results By Cycle:

Failures in Both
Older and Newer
Backsheets

Module
Construction
Matters

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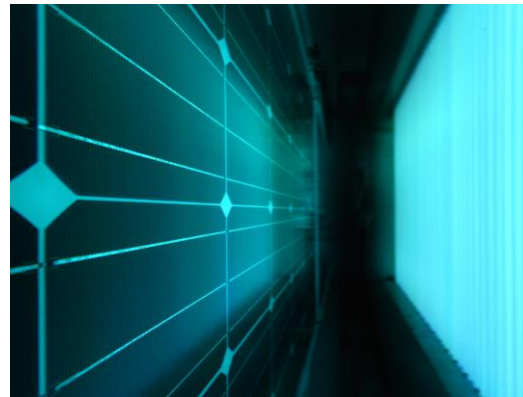
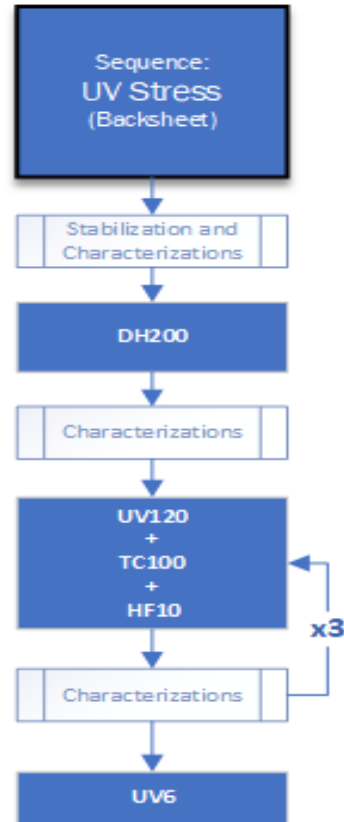


	Sample Group 1	Sample Group 2	Sample Group 3	Sample Group 4
	AAA	PVDF-1	PVDF-1	PET
	Standard Busbar	Multi-Wire Busbar	Standard Busbar	Multi-Wire Busbar
	Full cell (72)	Half-cut (144)	Full cell (72)	Half-cut (72)
	2013 – Mnfr. 1	2018 – Mnfr. 2	2018 – Mnfr. 3	2018 – Mnfr. 2
	Pass	Pass	Pass	Pass
	FAIL - Backsheet Cracking (Behind avg. 30% of cells) Pass - Wet Leakage	FAIL - Backsheet Cracking (Behind avg. 100% of cells) Pass - Wet Leakage	Pass	Pass
	-	-	FAIL - Backsheet Cracking (Behind avg. 28% of cells) Pass - Wet Leakage	Pass
	-	-	-	Pass

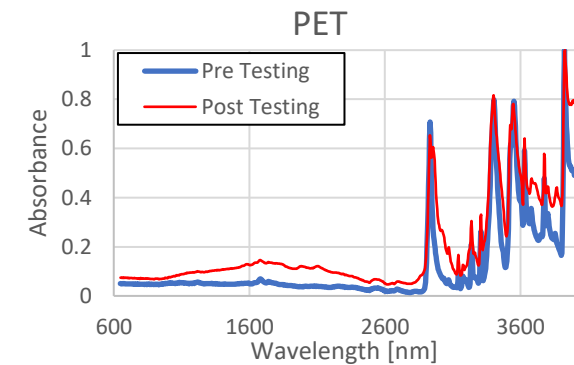
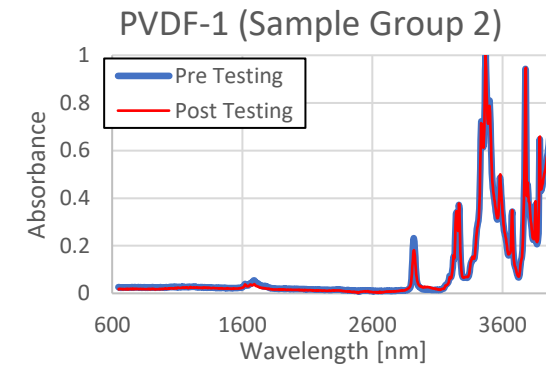
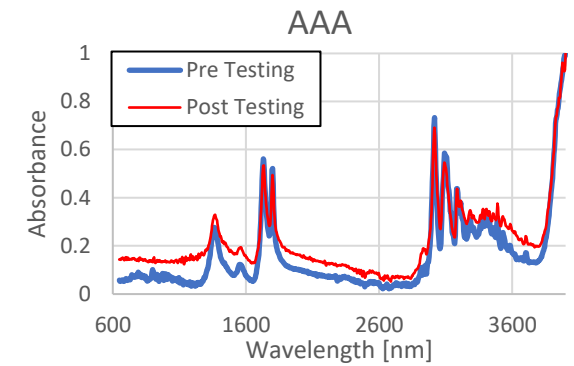
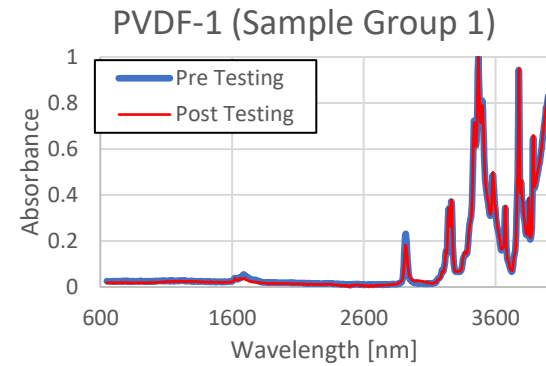
Ongoing Testing at CFV:

63209+ 360 kw/m2 = double the UV exposure of IEC 63209

Materials Analysis using FTIR



CFV is using FTIR Spectroscopy to probe materials changes after test exposures:



**Contact Us for
Questions or
Project
Inquires**

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