The Agriculture Program
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Module Cover Performance Testing at Texas A&M University[1]

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Testing of new module covers showed a wide range of performance for commercially available models. Covers tested included a range of construction types, including plastic film, plastic woven and vinyl woven materials. Materials were tested in a standard ponding apparatus (figure 1) after weathering in outdoor racks for varying lengths of time (figure 2). Several factors can affect the performance of module covers including construction, type and concentration of UV-light inhibitor, coating thickness, tape dimensions, and material types.

Figure 1: Ponding test apparatus.

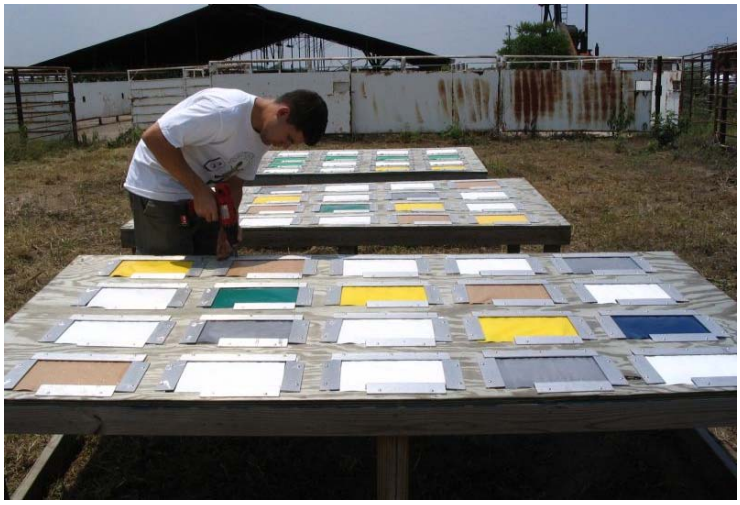

Figure 2: Outdoor weathering racks with module cover samples.

Water penetration through module cover samples in ponding tests after weathering

Outdoor Test		Material	Construction	Ponding Test Results		
				Summer 1	Winter	Summer 2
Accumulated Solar Radiation, ($MJ/m^{2)}$				1,800	2,700	4,400
				Average Water Penetration (grams of water)		
Cover Model Code	F+	Plastic	Woven (14x14)	391		
	K+	Plastic	Woven (14x14)	261		
	M+	Plastic	Woven (15x15)	197		
	J+	Plastic	Woven (12x12)	185		
	I	Plastic	Woven (9x12)	81	2,196	22,794
	B#	Plastic	Woven (12x12)	8		
	G	Plastic	Woven (8x9)	2	1	5
	H	Plastic	Woven (8x10)	1	1	2
	D	Plastic	Film	0	0	0
	C	Vinyl	Woven (8x8)	0	0	0
	A*	Plastic	Woven (8x10)			1
	L*	Plastic	Woven (12x9)			0
	N*	Plastic	Woven (12x9)			0

+Four cover models were removed from study after Summer 1 due to poor performance.
#One cover model was removed from study after Summer 1 due to inadequate number of samples.
*Three cover models added to the study during the Summer 2 period (exposure of 1,700 MJ/m^2).

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