

Name: Zhejiang First Advanced Material Research Institute Co., Ltd. Testing Center

Address: No.1235, Dayuan Road, Qingshanhu Street, Lin'an, Hangzhou, Zhejiang, China

Registration No. CNAS L10795

Accreditation Criteria: ISO/IEC 17025 and relevant requirements of CNAS

Date of Issue: 2018-03-12 Date of Expiry: 2024-03-11

SCHEDULE 3 ACCREDITED TESTING SCOPE

№	Test Object	Item/Parameter		Standard or Method	Note
		№	Item/ Parameter		
1	Ethylene-vinyl acetate copolymer (EVA) film for encapsulant solar module	1	Gram weight	Certification Criteria of Ethylene-vinyl Acetate Copolymer (EVA) Film for Encapsulant Photovoltaic (PV) Module CNCA/CTS 0013-2013 5.3.1	
		2	Crosslinking degree	Ethylene-vinyl acetate copolymer(EVA) film for encapsulant solar module GB/T 29848-2013 5.5.3	
				Certification Criteria of Ethylene-vinyl Acetate Copolymer (EVA) Film for Encapsulant Photovoltaic (PV) Module CNCA/CTS 0013-2013 5.5.2.1	
		3	Peel strength	Ethylene-vinyl acetate copolymer(EVA) film for encapsulant solar module GB/T 29848-2013 5.5.4	Accredited only for testing the sample force less than 1000N
4	Shrinkage rate	Ethylene-vinyl acetate copolymer (EVA) film for encapsulant solar module GB/T 29848-2013 5.5.5			
		Certification Criteria of Ethylene-vinyl Acetate Copolymer (EVA) Film for Encapsulant Photovoltaic (PV) Module CNCA/CTS 0013-2013 5.5.7			



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2	Back sheet for photovoltaic (PV) modules	1	Thickness	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS0014-2013 7.2	Accredited only for single layer method, and the sample thickness less than 10mm.
		2	Tensile strength	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 7.3	Accredited only for testing the sample force less than 1000N
		3	Elongation at break	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 7.3	Accredited only for testing the sample strain range between 10mm and 800mm.
		4	Interlayer peel strength	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 7.4	Accredited only for testing the sample force less

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№	Test Object	Item/Parameter		Standard or Method	Note
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					than 1000N
		5	Peel strength between backsheet and silicone	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 英 7.6	Accredited only for testing the sample force less than 1000N
		6	Peel strength between backsheet and EVA	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 英 7.7	Accredited only for testing the sample force less than 1000N
		7	Shrinkage rate	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 7.9	
		8	Yellowing index	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS0014-2013 7.13	
		9	PCT test	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 7.15	Accredited only for sample size less than 350mm*380mm, temperature of (118-150) °C /

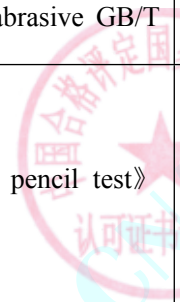


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					65% RH, Relative humidity of 65%RH -100%RH, pressure of (0.019-0.208) MPa
		10	Reflectivity	Certification criteria of Backsheet for Photovoltaic(PV) Module CNCA/CTS 0014-2013 7.16	Accredited only for the wavelength between 200nm and 1200nm
3	Insulating back sheet for terrestrial photovoltaic (PV) modules	1	Acid resistance	Insulating back sheet for crystalline silicon terrestrial photovoltaic (PV) modules GB/T 31034-2014 6.15	
		2	Alkali resistance	Insulating back sheet for crystalline silicon terrestrial photovoltaic (PV) modules GB/T 31034-2014 6.16	
		3	Abrasion resistance	Determination for abrasion resistance of coatings by falling abrasive GB/T 23988-2009	
		4	Film hardness	《Paints and varnishes - Determination of film hardness by pencil test》 GB/T 6739-2006 9	Accredited only for testing the sample hardness between HB and 6H.

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№	Test Object	Item/Parameter		Standard or Method	Note
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		5	Cross cut test (coating adhesion)	Paints and varnishes- Cross cut test for films GB/T 9286-1998	
4	Encapsulant film and back sheet for photovoltaic (PV) modules	1	Peel strength	Adhesives, 180° peel strength test method for a flexible-bonded-to-rigid test specimen assembly GB/T 2790-1995	Accredited only for testing the sample force less than 1000N
		2	Qualitative analysis by fourier transform infrared spectroscopy	General rules for infrared analysis GB/T 6040-2002 7	Accredited only for testing the wavelength number between 400/cm and 4000/cm.
		3	Differential scanning calorimetry analysis	Plastics-Differential scanning calorimetry (DSC) Part 1: General principles GB/T 19466.1-2004	Accredited only for testing the temperature between -40°C and 400°C.
5	Photovoltaic devices	1	Measurement of current - voltage characteristics	Photovoltaic devices-Part 1: Measurement of photovoltaic current-voltage characteristics IEC 60904-1:2006	Accredited only for measurements in the pulse



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№	Test Object	Item/Parameter		Standard or Method	Note
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					simulated sunlight
6	Terrestrial photovoltaic (PV) modules	1	Visual inspection	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements IEC 61215-2:2016 4.1	
		2	Maximum power determination	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 2: Test procedures IEC 61215-2:2016 4.2	Accredited only for module size less than 2000mm*1100mm
		3	Insulation test	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements IEC 61215-2:2016 4.3	
		4	Performance at STC and NMOT	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 2: Test procedures IEC 61215-2:2016 4.6	Accredited only for performance at STC
		5	UV preconditioning test	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements IEC 61215-2:2016 4.10	Accredited only for module size less than 1650mm*1000mm
		6	Thermal cycling test	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements IEC 61215-2:2016 4.11	Accredited only for module size less than 2200mm*1100mm



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		№	Item/ Parameter		
					200mm, temperature of -40°C~95°C , Relative humidity of 20%RH~95%RH
		7	Humidity-freeze test	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements IEC 61215-2:2016 4.12	Accredited only for module size less than 2200mm*1200mm, temperature of -40°C~95°C , Relative humidity of 20%RH~98%RH
		8	Damp heat test	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements IEC 61215-2:2016 4.13	Accredited only for module size less

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№	Test Object	Item/Parameter		Standard or Method	Note
		№	Item/ Parameter		
					than 2200mm*1200mm, temperature of -40°C~95°C, Relative humidity of 20%RH~98%RH
		9	Wet leakage current test	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements IEC 61215-2:2016 4.15	Accredited only for module size less than 1200mm*2400mm
7	Crystalline silicon terrestrial photovoltaic (PV) modules	1	Visual inspection	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.1	
		2	Maximum power determination	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.2	Accredited only for module size less than 2000mm*1100mm.
		3	Insulation test	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.3	



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№	Test Object	Item/Parameter		Standard or Method	Note
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		4	Potential-induced degradation	Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation - Part 1: Crystalline silicon IEC TS 62804-1:2015	Accredited only for stress method a (testing in damp heat using an environmental chamber)
		5	Performance at STC and NMOT	Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 2: Test procedures IEC 61215:2005 10.6	Accredited only for performance at STC
		6	UV preconditioning test	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.10	Accredited only for module size less than 1650mm*1000mm.
		7	Thermal cycling test	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.11	Accredited only for module size less than 2200mm*1200mm, temperature of -



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		№	Item/ Parameter		
					40°C~95°C , Relative humidity of 20%RH~98%RH
		8	Humidity-freeze test	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.12	Accredited only for module size less than 2200mm*1200mm, temperature of -40°C~95°C , Relative humidity of 20%RH~98%RH
		9	Damp heat test	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.13	Accredited only for module size less than 2200mm*1200mm,

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№	Test Object	Item/Parameter		Standard or Method	Note
		№	Item/ Parameter		
					temperature of -40°C~95°C , Relative humidity of 20%RH~98%RH
		10	Wet leakage current test	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval IEC 61215:2005 10.15	Accredited only for module size less than 1200mm*2400mm.
8	Plastic	1	Thickness	Plastics film and sheeting--Determination of thickness by mechanical scanning GB/T 6672-2001	Accredited only for testing the sample thickness less than 10mm.
		2	Density	Determination of the density of plastics and non-foams plastics Part 1: Impregnation, liquid pycnometer and titration GB/T 1033.1-2008 5.1	Accredited only for dipping method.
		3	Width	Determination of length and width plastics film and sheeting; ISO 4592:1992	Accredited only for testing the

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№	Test Object	Item/Parameter		Standard or Method	Note
		№	Item/ Parameter		
					sample width less than 3 meters.
		4	Shrinkage rate	Plastics—film and sheeting—Determination of dimensional change on heating GB/T 12027-2004	
		5	Luminous Transmittance	Determination of the luminous transmittance and haze of transparent plastics GB/T 2410-2008	Accredited only for testing the wavelength between 200nm and 1200nm.
		6	Haze	Determination of the luminous transmittance and haze of transparent plastics GB/T 2410-2008	Accredited only for testing the wavelength between 200nm and 1200nm.
		7	Tensile strength	Plastics-Determination of tensile properties-Parts 3: Test conditions for films and sheets GB/T 1040.3-2006	Accredited only for testing the sample force less than 1000N.
				Standard Test Method for Tensile Properties of Thin Plastic Sheeting ASTM D 882-2012	Accredited only for testing the



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№	Test Object	Item/Parameter		Standard or Method	Note
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					sample force less than 1000N.
		8	Elongation at break	Plastics-Determination of tensile properties-Parts 3: Test conditions for films and sheets GB/T 1040.3-2006	Accredited only for testing the sample strain range 10mm~800mm.
				Standard Test Method for Tensile Properties of Thin Plastic Sheeting ASTM D 882-2012	Accredited only for testing the sample strain range 10mm~800mm.
		9	Water absorption	Plastics—Determination of water absorption GB/T 1034-2008 6.3	
		10	Peel strength test	Test method for peel force of flexible laminated plastics GB/T 8808-1988	Accredited only for method A and testing the sample force less than 500N.
		11	Flame retardant	Plastics - Determination of burning characteristics - Horizontal and vertical	

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№	Test Object	Item/Parameter		Standard or Method	Note
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			properties	test GB/T 2408-2008 8 & 9	
9	Thin sheet materials	1	Solar Energy Transmittance	Standard Test Methods for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials ASTM E 424-71-2015 6	Accredited only for A method (Spectrophotometric Method), the wavelength between 200nm and 1200nm.
		2	Solar Energy Reflectance	Standard Test Methods for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials ASTM E 424-71-2015) 6	Accredited only for A method (Spectrophotometric Method), the wavelength between 200nm and 1200nm.
10	Electrical insulation film	1	Thickness	Film for electrical insulation-Part 2: Methods of test GB/T 13542.2-2009 4.1.1	Accredited only for testing the sample thickness less than 10mm.

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		№	Item/ Parameter		
		2	Width	Film for electrical insulation - Part 2: Methods of test GB/T 13542.2-2009 6	Accredited only for testing the sample width less than 3 meters.
		3	Tensile strength	Film for electrical insulation-Part 2: Methods of test GB/T 13542.2-2009 11	Accredited only for testing the sample force less than 1000N.
		4	Elongation at break	Film for electrical insulation-Part 2: Methods of test GB/T 13542.2-2009 11	Accredited only for testing the sample strain range 10mm~800mm.
		5	Surface resistivity	Film for electrical insulation - Part 2: Methods of test GB/T 13542.2-2009 15	Accredited only for testing the sample thickness less than 3mm.
		6	Volume resistivity	Film for electrical insulation - Part 2: Methods of test GB/T 13542.2-2009 16.1	Accredited

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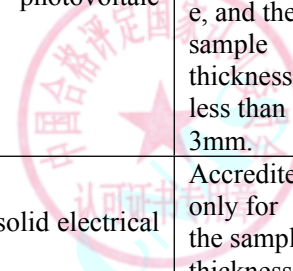
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№	Test Object	Item/Parameter		Standard or Method	Note
		№	Item/ Parameter		
					only for method 1 and testing the sample thickness less than 3mm.
		7	Shrinkage rate	Film for electrical insulation - Part 2: Methods of test GB/T 13542.2-2009 23	
11	Insulation Materials	1	Volume resistivity	Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials GB/T 1410-2006 12.1	Accredited only for testing the sample thickness less than 3mm.
				Measurement procedures for materials used in photovoltaic modules - Part 1-2: Encapsulants - Measurement of volume resistivity of photovoltaic encapsulants and other polymeric materials IEC 62788-1-2:2016	Accredited only for testing at room temperature, and the sample thickness less than 3mm.
		2	Surface resistivity	Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials GB/T 1410-2006 12.2	Accredited only for the sample thickness less than

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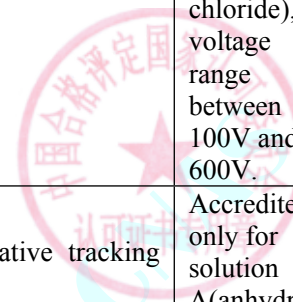
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					3mm.
		3	Proof tracking index	Method for the determination of the proof and the comparative tracking indices of solid insulating materials GB/T 4207-2012	Accredited only for solution A(anhydro us ammonium chloride), voltage range between 100V and 600V.
				Method for the determination of the proof and the comparative tracking indices of solid insulating materials IEC 60112:2003+A1:2009	Accredited only for solution A(anhydro us ammonium chloride), voltage range between 100V and 600V.
		4	Comparative tracking index	Method for the determination of the proof and the comparative tracking indices of solid insulating materials GB/T 4207-2012	Accredited only for solution A(anhydro us

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					ammonium chloride), voltage range between 100V and 600V.
				Method for the determination of the proof and the comparative tracking indices of solid insulating materials IEC 60112:2003+A1:2009	Accredited only for solution A(anhydro us ammonium chloride), voltage range between 100V and 600V.



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