 BHEL-EPD	ELECTROPORCELAINS DIVISION BENGALURU – 560012, INDIA Purchase Specification Group: Photovoltaic Module		SPEC. NO: PS-901-02-0010	
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EVA – ETHYLENE VINYL ACETATE SHEET (FRONT)


1.0 TECHNICAL CHARACTERISTICS:

1.1	Material	Ethylene Vinyl Acetate
1.2	Dimensions	Width – 985 ± 2 mm Thickness – 0.45 to 0.50 mm Length – in roll form of 100 linear meters each
1.3	Surface Type	Inside – Matt; Outside – Polished / Embossed
1.4	Curing Type	Fast Curing
1.5	Tensile Strength (MPa)	≥ 18 ± 3
1.6	Elongation at Break	> 500 %
1.7	Water absorption	< 0.1 %
1.8	Thermal Shrinkage MD	≤ 3 %
1.9	Thermal Shrinkage TD	≤ 1.5 %
1.10	Adhesion to Glass (N / cm)	> 60
1.11	Adhesion to Backsheet (N / cm)	> 40
1.12	Optical Transmittance for wave length (360-1100 nm)	> 91 %
1.13	UV Cut Off wave length (nm)	-
1.14	Refractive Index	1.48
1.15	Dielectric Strength (kV / mm)	> 18
1.16	Volume Resistivity (Ω.cm)	≥ 1 × 10 ¹⁵
1.17	Gel Content	> 75 %
1.18	Color	Transparent
1.19	Haze	< 7%
1.20	Vinyl Acetate Content	28 ± 2 %
1.21	Yellowness Index of UV Exposure Test (IEC 61215)	≤ 4
1.22	Yellowness Index of Damp Heat Test (85°C, 85% RH, 1000hrs.) (IEC 61215)	≤ 2
1.23	Ethylene Vinyl Acetate should be	PID Resistance, Good Adhesive, Excellence Weather ability

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2 nd Issue	SPV Eng.	RKP 	NAR 	CNP 	20.03.18

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<p>2.0 VISUAL CHARACTERISTICS:</p> <p>2.1 Appearance: Smooth surface, uniform thickness and shall have no discoloration.</p> <p>2.2 Shall be non-sticky at room temperature.</p> <p>2.3 Shall have not any bubble and peeling.</p> <p>2.4 The EVA roll surface shall be smooth without any undulations.</p> <p>3.0 PACKING CONDITIONS:</p> <p>3.1 EVA roll shall be packed in air-tight Aluminium foil sheet to avoid possible air ingress material degradation.</p> <p>3.2 Each and every EVA roll shall be packed in individual carton box.</p> <p>3.3 Individual carton box shall be stacked in a pallet horizontally with adequate end support to the EVA rolled winding tube to ensure that load is not passed on to EAV sheet roll.</p> <p>3.4 Each roll shall have manufacturers label containing</p> <ul style="list-style-type: none"> i) Manufacturers Name ii) Lot No iii) Specification No. - BHEL / PS-901-02-0010 iv) Date of Manufacture v) Date of Expiry vi) Dimensions (Length, Width, Diameter) vii) Quantity viii) Weight <p>3.5 Final packing box shall have a label containing BHEL Purchase Order No. and Date.</p> <p>3.6 Recommended storage condition shall be printed on each carton box and pallet.</p> <p>3.7 Identification of Front & Back EVA sheets shall be distinguishably marked in each carton box and pallets.</p> <p>4.0 TESTS:</p> <p>4.1 Each lot must be accompanied with routine Test Certificate, for the parameters described in section 1.0, clause from 1.1 to 1.20.</p> <p>4.2 First lot of supplies shall be accompanied by additional Test certificate for parameter 1.21 and 1.22 prescribed in section 1.0.</p> <p>4.3 Vendor has to provide valid type test report for Dielectric Strength, certified with TUV / UL which shall be valid for five (5) year from the date of issue from lab.</p> <p>5.0 INSPECTION AT BHEL:</p> <p>5.1 Visual Inspection, Dimensional & Properties evaluation.</p> <p>5.2 Single Sampling Plan as per IS:10673-1983, Special Inspection Level S-4, AQL 1.0</p>						
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ELECTROPORCELAINS DIVISION
BENGALURU - 560012, INDIA
Purchase Specification
Group: Photovoltaic Module

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EVA - ETHYLENE VINYL ACETATE SHEET (BACK)

1.0 TECHNICAL CHARACTERISTICS:

1.1	Material	Ethylene Vinyl Acetate
1.2	Dimensions	Width - 985 ± 2 mm Thickness - 0.45 to 0.50 mm Length - in roll form of 100 linear meters each
1.3	Surface Type	Inside - Matt; Outside - Polished / Embossed
1.4	Curing Type	Fast Curing
1.5	Tensile Strength (MPa)	≥ 18 ± 3
1.6	Elongation at Break	> 500 %
1.7	Water absorption	< 0.1 %
1.8	Thermal Shrinkage MD	≤ 3 %
1.9	Thermal Shrinkage TD	≤ 1.5 %
1.10	Adhesion to Glass (N / cm)	> 60
1.11	Adhesion to Backsheet (N / cm)	> 40
1.12	Optical Transmittance for wave length (360-1100 nm)	> 91 %
1.13	UV Cut Off wave length (nm)	360
1.14	Refractive Index	1.48
1.15	Dielectric Strength (kV / mm)	> 18
1.16	Volume Resistivity (Ω.cm)	≥ 1 × 10 ¹⁵
1.17	Gel Content	> 75 %
1.18	Color	Transparent
1.19	Haze	< 7%
1.20	Vinyl Acetate Content	28 ± 2 %
1.21	Yellowness Index of UV Exposure Test (IEC 61215)	≤ 4
1.22	Yellowness Index of Damp Heat Test (85°C, 85% RH, 1000hrs.) (IEC 61215)	≤ 2
1.23	Ethylene Vinyl Acetate should be	PID Resistance, Good Adhesive, Excellence Weather ability

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**ELECTROPORCELAINS DIVISION
BENGALURU – 560012, INDIA
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2.0 VISUAL CHARACTERISTICS:

- 2.1 Appearance: Smooth surface, uniform thickness and shall have no discoloration.
- 2.2 Shall be non-sticky at room temperature.
- 2.3 Shall have not any bubble and peeling.
- 2.4 The EVA roll surface shall be smooth without any undulations.

3.0 PACKING CONDITIONS:

- 3.1 EVA roll shall be packed in air-tight Aluminium foil sheet to avoid possible air ingress material degradation.
- 3.2 Each and every EVA roll shall be packed in individual carton box.
- 3.3 Individual carton box shall be stacked in a pallet horizontally with adequate end support to the EVA rolled winding tube to ensure that load is not passed on to EAV sheet roll.
- 3.4 Each roll shall have manufacturers label containing
 - i) Manufacturers Name
 - ii) Lot No
 - iii) Specification No. - BHEL / PS-901-02-0011
 - iv) Date of Manufacture
 - v) Date of Expiry
 - vi) Dimensions (Length, Width, Diameter)
 - vii) Quantity
 - viii) Weight
- 3.5 Final packing box shall have a label containing BHEL Purchase Order No. and Date.
- 3.6 Recommended storage condition shall be printed on each carton box and pallet.
- 3.7 Identification of Front & Back EVA sheets shall be distinguishably marked in each carton box and pallets.

4.0 TESTS:

- 4.1 Each lot must be accompanied with routine Test Certificate, for the parameters described in section 1.0, clause from 1.1 to 1.20.
- 4.2 First lot of supplies shall be accompanied by additional Test certificate for parameter 1.21 and 1.22 prescribed in section 1.0.
- 4.3 Vendor has to provide valid type test report for Dielectric Strength, certified with TUV / UL which shall be valid for five (5) year from the date of issue from lab.

5.0 INSPECTION AT BHEL:

- 5.1 Visual Inspection, Dimensional & Properties evaluation.
- 5.2 Single Sampling Plan as per IS:10673-1983, Special Inspection Level S-4, AQL 1.0

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