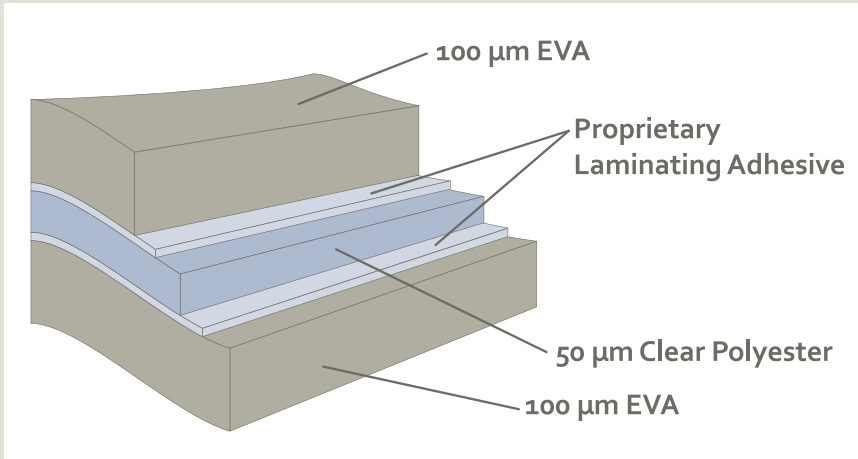


InsulPatch®

MADICO PV LAMINATE



Madico InsulPatch® Photovoltaic Laminates

InsulPatch® is a multi-layered laminate designed to act as an electrical insulator and physical spacer in critical areas inside electronic devices. It is often used in a photovoltaic module where junction boxes are attached and in locations where ribbon wires come in close proximity to each other to prevent a short circuit within the module's encapsulated matrix.



Dielectric Bond Technology

Madico has pioneered to create a more cost-effective and high performing backsheet construction we call Dielectric Bonding Technology (DBT) which eliminates the interior layer of either PVF or Fluoropolymer. Compared to the standard design, PVF/Polyester/PVF design, our innovative construction dramatically increases the laminate's bond strength, power output and insulation against electrical discharge.

Advantages

- Custom colors
- Proven durability
- Maximum bond strength to encapsulant
- Optimize vacuum lamination throughput
- Ideal patch system
- High Dielectric performance

InsulPatch®

Material Composition	EVA / PET / EVA
Thickness	265 ± 27 µm
Width Range	50 - 1830 mm
Weight	285 g/m ²
Density	1.1-1.2 g/cm ³
EVA Colors	Clear, Bright White, Black, Custom Colors

Technical Characteristics

Tensile Strength at Break (MD/TD) Internal Testing - Data Available	42 MPa (MD) 49 MPa (TD)
Elongation at Break (MD/TD) Internal Testing - Data Available	148% (MD) 80% (TD)
Dielectric Strength UL 746 A	18 kV
Volume Resistivity (10x ohm-cm)	16
Dimensional Stability (MD/TD) 150°C for 30 min, Internal Testing - Data Available	< 1%
EVA Peel Strength from Encapsulant Internal Testing - Data Available	≥ 70 N/cm
Partial Discharge IEC 60664-1	≥ 1000 VDC
Inclined Plane Tracking UL 746A	average 60+ min to track at 2500V
Comparative Tracking Index (CTI)	CTI Value: 0V

MADICO
ISO 9001 Certified



Intertek

64 Industrial Parkway
Woburn, MA 01801
P: 800-633-0140
781-935-7850
F: 781-935-6841
www.MadicoPV.com

Typical Data – Not Specification

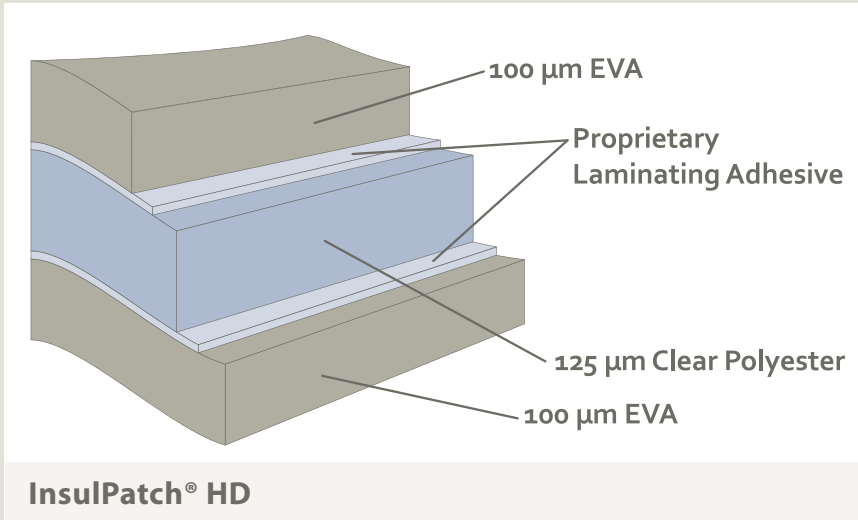
The performance representations and suitability in this Data Sheet are based on testing accomplished by Madico or its agents. Since only the manufacturer of the panel is aware of the specific manufacturing processes and conditions which the product will undergo during assembly of the PV solar panels, and of the specific conditions in which the product will ultimately be used, it is the manufacturer's responsibility to determine whether the product is suitable for its intended end-use. InsulPatch® is a registered trademark owned by Madico, Inc.

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V0730 R06

InsulPatch® HD

MADICO PV LAMINATE



Material Composition	EVA / PET / EVA
Thickness	340 ± 34 µm
Width Range	25 - 1830 mm
Weight	667 g/m ²
Density	1.18 g/cm ³
EVA Colors	Clear, Bright White, Black, Custom Colors

Technical Characteristics

Tensile Strength at Break (MD/TD) Internal Testing - Data Available	89 MPa (MD) 103 MPa (TD)
Elongation at Break (MD/TD) Internal Testing - Data Available	184% (MD) 131% (TD)
Tear Strength (MD/TD) Internal Testing - Data Available	4.84 N (MD) 5.52 N (TD)
Dimensional Stability (MD/TD) 150°C for 30 min, Internal Testing - Data Available	< 1%
EVA Peel Strength from Encapsulant Internal Testing - Data Available	≥ 70 N/cm
Partial Discharge IEC 60664-1	≥ 1000 VDC

Madico InsulPatch® HD Photovoltaic Laminates

InsulPatch® is a multi-layered laminate designed to act as an electrical insulator and physical spacer in critical areas inside electronic devices. It is often used in a photovoltaic module where junction boxes are attached and in locations where ribbon wires come in close proximity to each other to prevent a short circuit within the module's encapsulated matrix.

InsulPatch® High Dielectric (HD) offers improved dielectric bonding, giving engineers flexibility and options for module designs. Also, the increased thickness offers greater partial discharge.

InsulPatch® is a multi-functional product; it can be implemented during the planning and/or construction phase of the solar module. It is also an ideal patch system if problems or unforeseen issues occur during the development.



Dielectric Bond Technology

Madico has pioneered to create a more cost-effective and high performing backsheet construction we call Dielectric Bonding Technology (DBT) which eliminates the interior layer of either PVF or Fluoropolymer. Compared to the standard design, PVF/Polyester/PVF design, our innovative construction dramatically increases the laminate's bond strength, power output and insulation against electrical discharge.

Advantages

- Custom colors
- Proven durability
- Maximum bond strength to encapsulant
- Optimize vacuum lamination throughput
- Ideal patch system
- The ultimate in dielectric bonding
- High Dielectric performance

MADICO
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Typical Data – Not Specification

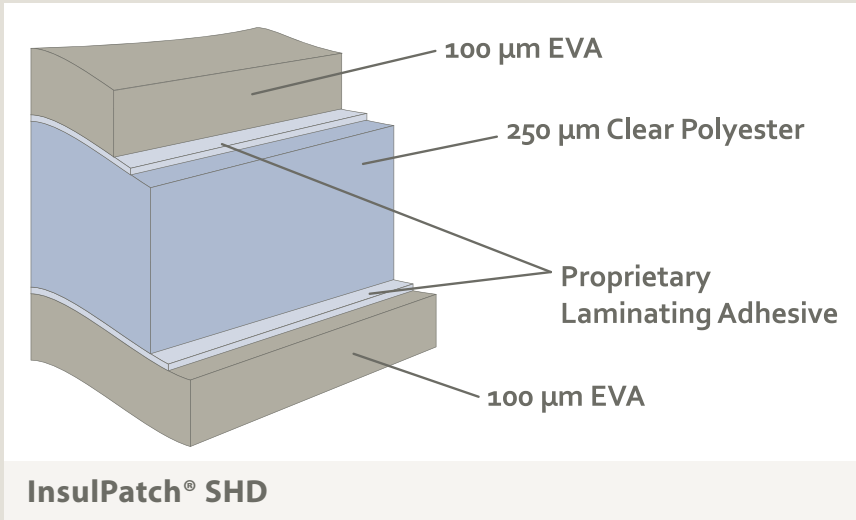
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V0850 R04

InsulPatch® SHD

MADICO PV LAMINATE



Madico InsulPatch® SHD Photovoltaic Laminates

InsulPatch® is a multi-layered laminate designed to act as an electrical insulator and physical spacer in critical areas inside electronic devices. It is often used in a photovoltaic module where junction boxes are attached and in locations where ribbon wires come in close proximity to each other to prevent a short circuit within the module's encapsulated matrix.

InsulPatch® Super High Dielectric (SHD) is the ultimate in dielectric bonding, offering engineers flexibility and options for module designs. In addition, the increased thickness offers greater partial discharge.

InsulPatch® is a multi-functional product; it can be implemented during the planning and/or construction phase of the solar module. It is also an ideal patch system if problems or unforeseen issues occur during development.

Material Composition	EVA / PET / EVA
Thickness	475 ± 48 µm
Width Range	25 - 1830 mm
Weight	1000 g/m ²
Density	1.18 g/cm ³
EVA Colors	Clear, Bright White, Black, Custom Colors

Technical Characteristics

Tensile Strength at Break (MD/TD) Internal Testing - Data Available	101 MPa (MD) 118 MPa (TD)
Elongation at Break (MD/TD) Internal Testing - Data Available	174% (MD) 129% (TD)
Tear Strength (MD/TD) Internal Testing - Data Available	8.71 N (MD) 10.77 N (TD)
Dimensional Stability (MD/TD) 150°C for 30 min, Internal Testing - Data Available	< 1%
EVA Peel Strength from Encapsulant Internal Testing - Data Available	≥ 70 N/cm
Partial Discharge IEC 60664-1	≥ 1000 VDC



Dielectric Bond Technology

Madico has pioneered to create a more cost-effective and high performing backsheet construction we call Dielectric Bonding Technology (DBT) which eliminates the interior layer of either PVF or Fluoropolymer. Compared to the standard design, PVF/Polyester/PVF design, our innovative construction dramatically increases the laminate's bond strength, power output and insulation against electrical discharge.

Advantages

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