

Custom Membrane Switch Components

Five Main Membrane Switch Components

Each layer of a membrane switch performs a function. Some components do double and even triple duty. The materials specified for these components must be manufactured and converted to provide maximum performance and long life.

Circuit Films

DuPont Teijin Films manufactures several types of film for the screen-printing of the top and bottom circuits of membrane switches. Melinex ST[®] is heat treated for low shrinkage and dimensional stability and is pretreated for adhesion to multiple passes of a wide range of conductive inks, dielectric inks, and varnishes and solvents.

All polyester films from DuPont Teijin Films are resistant to moisture, gas, heat and chemical attack, making them perfectly suited for use in medical equipment. These films are also conditioned for excellent handling and accurate screen-printing. DuPont Teijin polyester films are also engineered to resist edge shatter for cleaner die cutting.

Graphic Overlay Films

Hardcoat Films for Switches

Tekra's Marnot[®] and ProTek[®] hardcoat films are ideal for membrane switch overlay applications. These films are polycarbonate and polyester substrates that have been specially treated so that their surfaces can be selectively textured, embossed or printed with UV inks. Available in finishes ranging from glossy clear to textured matte black. Tekra hard coat films offer a range of display options. Hardcoated Membrane Switch Overlay

Hardcoat films resist scratching and staining from a broad spectrum of foods, household cleaners and aggressive chemicals. For special applications, such as medical equipment, Tekra hardcoat films may be embossed or otherwise thermoformed without sacrificing performance characteristics.

For full information, please refer to the [Hardcoats products section](#).



Custom Membrane Switch Components

Polycarbonate Films for Switches

Our range of tailor-made LEXAN[®] and other polycarbonate films deliver performance and versatility. These materials are characterized by outstanding optical clarity, mechanical strength and ease of processing. Top quality is available in a wide choice of standard and high performance grades, and a variety of surface finishes and textures.

For full information, please refer to the [Polycarbonate products section](#).

Polyester Films for Switches

Polyester films from DuPont Teijin Films[™] are versatile and durable answers for membrane switch display applications. Available in super clear, hazy and opaque white, these films offer a range of brilliant display options. DuPont Teijin Films polyester films are printable, metallizable, die-cuttable, can be heat stabilized, and are solvent resistant. Most varieties provide excellent adhesion to a broad range of varnishes and inks, including UV inks.

For special applications, such as medical equipment, DuPont Teijin Films polyester films also offer low shrinkage, heat sealability, high dielectric strength, and enhanced resistance to moisture, gas, heat and chemical attack.

For full information, please see our [Polyester films products section](#).

Spacers

In addition to binding together the different layers of a membrane switch, 3M laminated adhesives are also used to hold the layers together. Double-liner adhesives are specially constructed sheets of non-adhesive carriers held together by a 3M pressure sensitive adhesive. This design gives the spacer film the structural integrity to be die-cut in intricate patterns without breaks. The two poles of the membrane switch, screen-printed on polyester film, can then make contact through the die-cut window upon the application of pressure.



3M membrane switch spacers are available in roll or sheet form in a variety of thicknesses and liner types.

Densified kraft liners provide stiffness for rotary die-cutting and clean edges, Polycoated kraft liners are moisture-sealed with an extra polymer coating on both sides for reduced warping and wrinkling. Polycoated liners are suitable for clean room application, making them the spacer films

Custom Membrane Switch Components

films of choice for membrane switches used in medical equipment. Lay flat liners provide more stiffness to the spacer film for better handling, easy kiss-cut die-cutting, fewer liner breaks, easier lamination without wrinkles and more versatile product configuration. Film liners give spacer films moisture resistance, clean die-cuts for easy visual inspection and clean room suitability. Film liners are also recommended for spacer films in membrane switches used in medical equipment.

For full information, please see our [3M™ Membrane Switch Spacers product page](#).

Switch Adhesives

3M laminating adhesives are used to bind together the different layers of a membrane switch. Because the layers may be made of different materials with unique properties, the adhesives used to hold them together must possess special characteristics. 3M laminating adhesives have been engineered to perform well with a large selection of substrates, in a wide range of conditions, under a variety of pressures and against a list of environmental factors.



3M laminating adhesives are pressure sensitive acrylic adhesives made from synthetic polymers, and designed to adhere to most surfaces. The adhesion strength of these materials provides excellent resistance to the effects of chemicals and temperature. They are engineered for permanent bonding application.

The level of adhesion, or bond strength between adhesive and surface, varies directly with surface energy. The materials used in membrane switches include adhesives for both low surface energy (LSE) and high surface energy (HSE) materials. Some adhesives work better with LSE materials, such as certain plastics (polypropylene and polyethylene), porous fabrics, foams, oily metals, and powder paints. Other adhesives are better suited to HSE surfaces, such as clean metals and HSE plastics.

3M laminating adhesives include solvent-free materials for use with solvent-sensitive films and substrates, thick adhesives for use on textured surfaces, and soft adhesives for use on contoured surfaces.

For full information, please refer to the [Adhesives product section](#).

Switch Conductive Inks

Conductive inks from DuPont Microcircuit Materials include a variety of products that bring



Tek Tip

Custom Membrane Switch Components

sophisticated multi-layer designs within reach of virtually every switch designer.

For full information, please refer to the [Conductive Inks product section](#).

The Industry's Leading Custom Membrane Switch Components Distributor

Tekra, A Division of EIS, Inc. is the leading distributor for the components required to design and product a successful membrane switch: Engineered plastics, adhesives, advanced hardcoated films, conductive inks, graphic inks, and more.

Through our partnerships with companies like DuPont Teijin Films, DuPont Microcircuit Materials, SABIC Innovative Plastics, and 3M, we provide the quality products and service to support the most challenging switch designs.

Our Dedicated sales team and staff offers over 65 years of experience in the plastics industry, and we enjoy close, long-term partnerships with our customers.