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Lamination: Wide-ranging films portfolio for protective and adhesive functions

PC and TPU films can each be processed using various lamination techniques. Platilon® and Dureflex® TPU films are compatible with flame, adhesive, and hot-melt lamination. Makrofol® and Bayfol® PC films can be used with adhesive and adhesive-free lamination as well as masking.

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Featured Brands

Bayfol®

Engineering thermoplastic and specialized photopolymer films

Dureflex®

Polyurethane film made from aromatic and aliphatic polyester or polyether

Makrofol®

Thermoplastic polycarbonate films

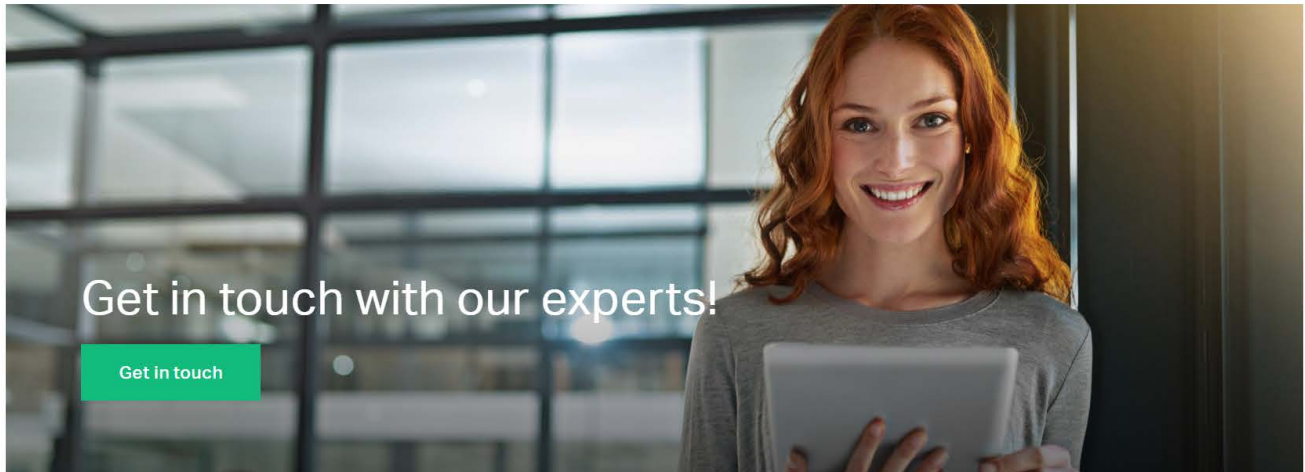
Platilon®

Platilon® TPU films

Thermoplastic polyurethane (TPU) films can be joined using three different lamination methods, each providing distinct advantages depending on the application. Flame lamination employs an open flame to bond film to soft polyurethane foams, which are often subsequently processed by die-cutting. Adhesive lamination relies on hot-melt adhesives for smooth, flexible and temperature-resistant adhesion. Hot-melt lamination is ideal for bonding films with woven, non-woven, and knitted fabrics, as well as other substrates.

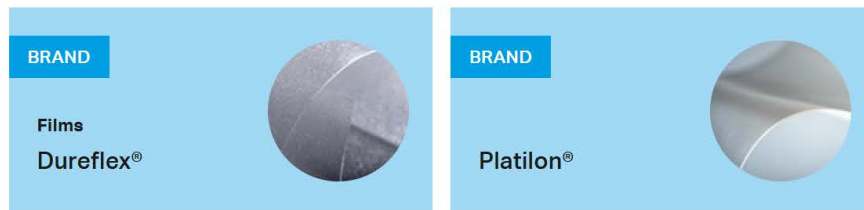
Polycarbonate films are also compatible with three different lamination techniques. Masking films can be applied to protect glossy film surfaces from dirt or scratches during transportation and handling. With adhesive-free lamination, a strong bond is

formed that cannot be separated non-destructively. Adhesive lamination can be used to join PC films with numerous materials such as non-woven or woven fabrics.



Flame lamination: Foam-to-film bonds for a variety of applications

Flame lamination creates a bond by passing soft polyurethane foam over an open flame to produce a thin adhesive layer of molten polymer used to bond the foam to TPU film. This technique is frequently employed to create laminates that are subsequently processed by die-cutting. Applications where Dureflex® and Platilon® film may be flame laminated include automotive seating and headrests, headliners, sun visors, sound deadening constructions, motor housing insulation and automotive carpet backing as well as shoe inserts.



Adhesive lamination: For smooth, durable textile seams

Adhesive lamination uses TPU adhesives or moisture-curing PU hot-melt adhesives which, after melting, are pumped out of a storage container and applied to textiles or films. After joining the substrates, three further steps take place: adhesion, cooldown and curing of the adhesive. The advantage of this process is the smooth, flexible adhesion of textiles and films. Textiles joined with cross-linking adhesive systems can be washed at temperatures of 90°C. Applications where Dureflex® and Platilon® film may be laminated by adhesives include multilayer textile laminates, woven and non-woven fabrics, and breathable clothing.

Hot-melt lamination: Bonds films with woven, non-woven, and knitted fabrics

Hot-melt lamination can be used to combine our Dureflex® and Platilon® films with woven, non-woven, and knitted fabrics, as well as other substrates, by applying heat and pressure. The resulting laminates offer improved physical strength for resistance to wear, punctures, and tearing, as well as excellent barrier properties for enhanced water resistance and breathability. The finished laminates possess the complementary properties of fabrics and polyurethane films.

Dureflex® and Platilon® films can also be used as flexible adhesives with significant tensile properties in order to bond numerous materials in a composite structure. Hot-melt lamination is compatible with these TPU films in applications such as automotive headliners, seam tapes, inflatable rafts, blood pressure cuffs, emblems, labels, breathable apparel, ballistic vests, smart cards (e.g. credit, debit, ID, etc.), radio frequency identification (RFID) systems, conveyor and drive belting, and cured in-place pipe rehabilitation (CIPP).

Masking films: Protection for glossy polycarbonate film surfaces

Our high-gloss double-sided Makrofol® and Bayfol® polycarbonate films are supplied with protective masking films as standard. These masking films protect glossy surfaces from dirt and scratches during transportation and handling. In addition, Makrofol® or Bayfol® films with precise mattings are supplied with special laminating films which adhere to matte surface structures.

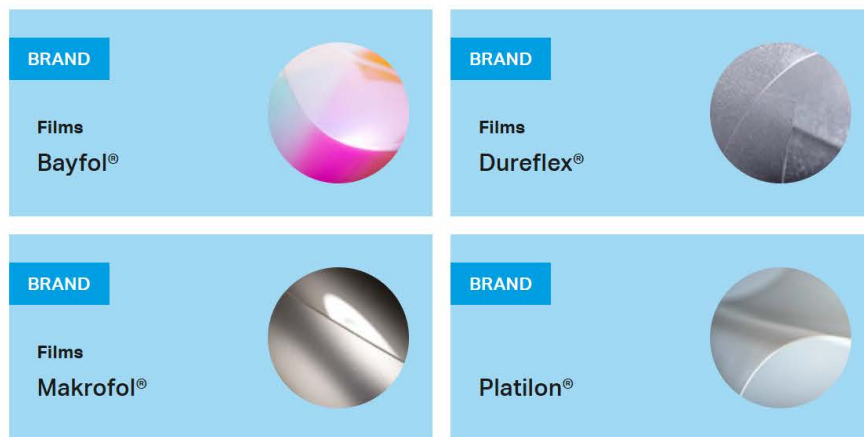


Adhesive-free lamination: High-strength joining based solely on heat and pressure

Makrofol® or Bayfol® PC films can be laminated without the use of adhesives by applying heat and pressure. This process does not permit non-destructive separation of the film after bonding. One important requirement is that the film must be heated above the softening point of polycarbonate (approximately 148°C), and subject to a minimum pressure of 15 N/cm² for a number of minutes.

Adhesive lamination: Diverse applications rely on thermoplastic adhesives

The adhesive lamination of Makrofol® or Bayfol® PC films mainly uses thermoplastic adhesives – especially moisture-curing polyurethane hot-melt adhesives or adhesive systems which react at temperatures above 60°C. This lamination process makes it possible to join films with numerous materials including non-woven or woven fabrics.



Brochure

TPU hot melt adhesive films- only USA | Bayfol®, Platilon®



Related articles



CASE STUDY

Smart automotive touch screens

Polycarbonates offer new design freedom for large, multi-touch screens that redefine the driving experience



CASE STUDY

360° holographic display

Together with Sony, we developed a 360 degree holographic display that showcases high-tech solutions for AR



CASE STUDY

Night light demonstrator

Covestro materials enable a new ultra-slim & seamless functional design.

Related Technologies



TECHNOLOGY

Autoclave processing

Autoclave processing bonds rigid layers of material with flexible adhesive interlayers to create strong composites



TECHNOLOGY

Welding

PC and TPU films can be joined using ultrasonic welding, heat sealing, high frequency welding, laser welding or impulse welding



TECHNOLOGY

High pressure forming & thermoforming

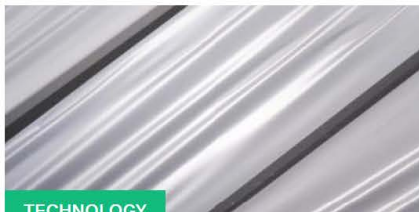
High pressure forming and thermoforming processes for shaping printed, semi-finished film into three-dimensional components



TECHNOLOGY

Die-cutting/Punching

Die-cutting, punching, and stamping are mechanical processes used to fashion film parts into predefined shapes or sizes



TECHNOLOGY

Foam-in-place

Whenever barriers are required in foam-in-place processes, our thermoplastic polyurethane films provide an effective solution



TECHNOLOGY

Film insert molding (FIM)

Film insert molding (FIM) enables one-step fabrication of plastic components with a decorated or functional surface

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Covestro is a world-leading supplier of high-tech polymer materials: innovative, sustainable and diverse.

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