Mylar® Specialty Films

Melinex® Polyester Film

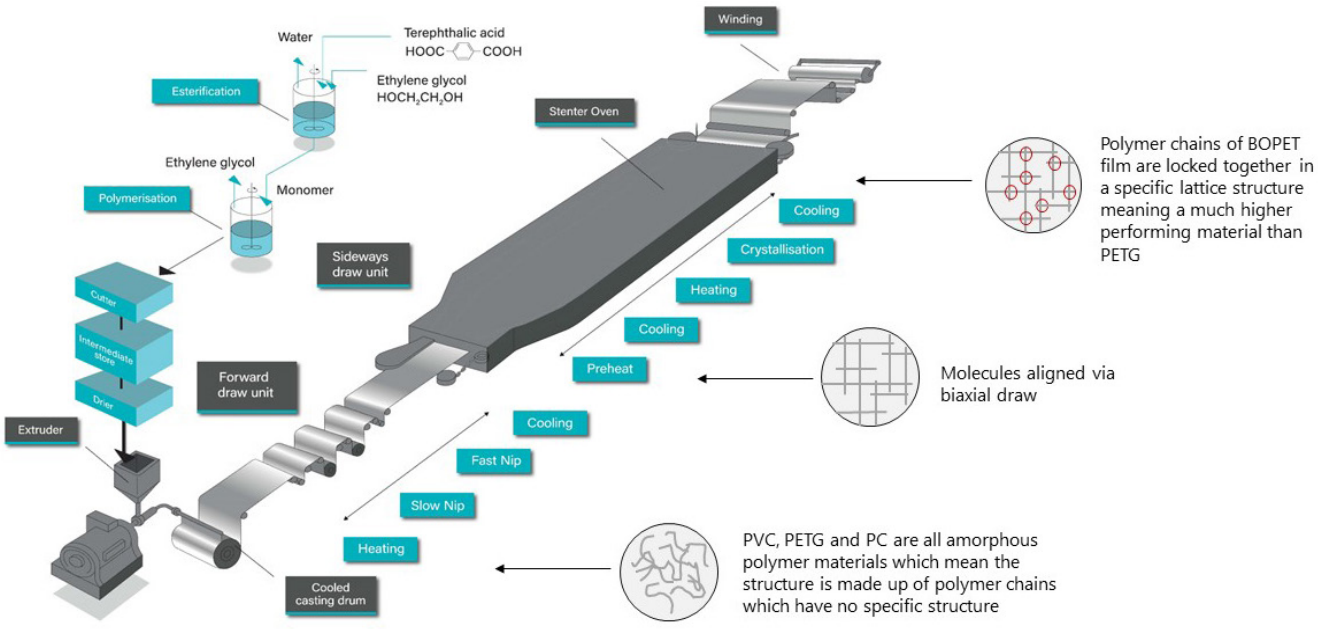
For Durable Cards

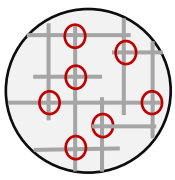
Why choose Melinex® PET film?

The combination of durability, cost effectiveness and simplicity of implementation makes Melinex® polyester film the number one choice in a wide range of National ID and other long life card applications worldwide with over 2.5 billion cards issued in the past 8 years.

	Melinex®	PC	PETG	PVC
Durability	✓✓✓	✓✓	✓	✓
Temperature Resistance	✓✓✓	✓✓✓	✓	✓
Environmental Credentials	✓✓✓	✓	✓✓✓	✓
Solvent Resistance	✓✓✓	✓	✓✓	✓
Ease of Use	✓✓	✓	✓✓	✓✓✓
Cost Effectiveness	✓✓	✓	✓✓	✓✓✓

What is biaxially oriented polyester film?



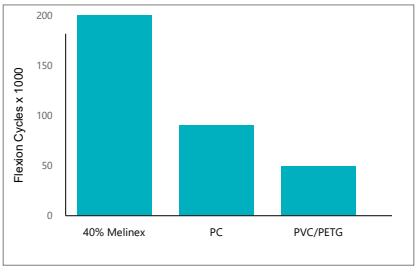


Melinex® is the brand name for our PET films and is a biaxially oriented crystalline material with polymer chains locked together in a specific lattice structure. This means it is a much higher performing material than PETG. The structure gives it enhanced durability and excellent temperature resistance.

PVC, PETG and Polycarbonate (PC) are all amorphous polymer materials which means they are made up of polymer chains which have no specific structure.

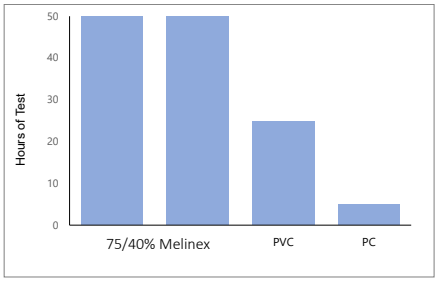
Technical benefits of cards made with Melinex® PET film

Flex Resistance



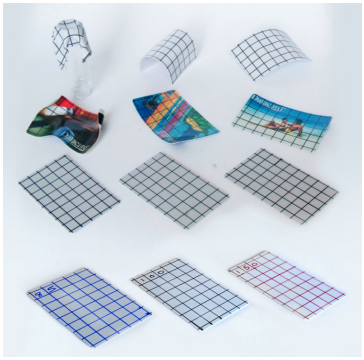
- The ISO Flex test uses repeated flexions of the card to simulate day to day use.
- Appearance of card is monitored throughout the test cycle to check for cracks or complete card failures.
- Cards containing Melinex® PET film showed no failures at end of test, other cards failed in region of implant module.

Solvent Resistance



- Melinex® PET has excellent resistance to embrittlement and premature failure caused by plasticisers found in wallets.
- Test method involves adding a small droplet of dioctyl phthalate (DOP) plasticizer to the card surface and placing it in a static stress fixture.
- Test measure hours before card fracture occurs (Test methods: INCITS322 & ISO24789-2).

Temperature Resistance



- Melinex® PET film provides excellent performance at elevated temperatures due to the crystallisation process (230ºC for extended period during manufacturing)
- Melinex® PET film offers superior thermal stability compared to both PETG and PVC.
- Melinex® PET film is used extensively in flexible electronics applications (continuous use – 70 ºC – 130 ºC)

A focus on sustainability

PET – a sustainable building block

- Low carbon footprint and water usage compared to alternative materials
- Commercially available with high quality post consumer recycled content
- Available with 30% bio derived raw materials
- Most recycled plastic globally through best in class high yield recycling processes
- Excellent performance/weight ratio minimising plastic use
- Halogen free with zero hazardous waste products

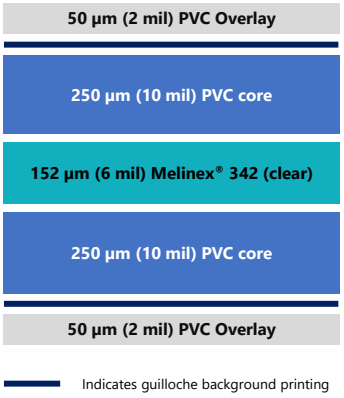
Melinex® PET Film in ID Card applications

Global threats to national security, tighter border controls and the need to identify people in a wide range of situations makes secure ID documents increasingly important.

Using Melinex® PET films for ID cards provides security and extended life time, that's why over 300 million ID cards issued each year use Melinex® PET films.

Typical Melinex® PET film card applications

Melinex® PET films for Driver's Licence and Clear Window Cards

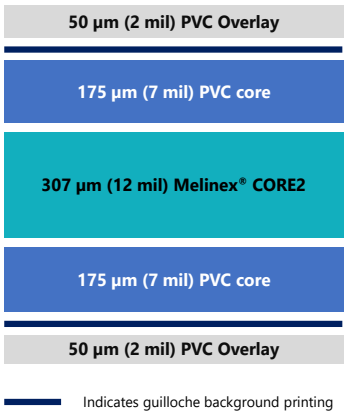


- Addition of clear Melinex® PET film provides more durable window card for ID applications vs clear PVC and/or PC
- Increased mechanical and thermal performance vs standard PVC cards
- Printing on PVC
- Typical applications include driver's licence, clear window ID, additional security feature
- Two side heat seal assists with lamination to PVC
- Can be incorporated into any interior layer of card for added durability

Laser Engravable Melinex® PET film ID Card

- Overlay allows laser personalisation
- Melinex® CORE2 gives significantly increased toughness and durability compared with PVC or PETG solutions
- Less expensive than polycarbonate solutions
- Laser engravable PVC or PETG can be used in place of Melinex® LEO

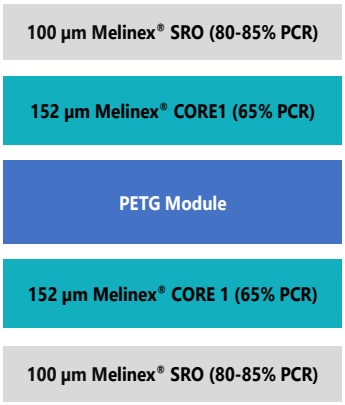
Melinex® PET films for Campus Cards



- Increased mechanical and thermal performance vs standard PVC cards
- Printing on PVC
- 40% Melinex®/60% PVC is the industry standard and preferred composition for campus cards
- Superior durability, passes laundry test, excellent temperature and solvent resistance
- Xavier study of 9000 cards tested in a campus environment concluded that cards using Melinex® PET film were the most durable

* Tushie, David "Longer Card Expiration Requires Better Card Durability" Card Manufactuing magaxine (June 2052015; Vol 24;4 pgs 22-23)

Mono Material Recyclable Structure



- Manufactured with high levels of post consumer recycled material, giving another life to single use plastic waste
- Mono material solution, reducing carbon footprint and increasing recyclability
- No deterioration of product properties or durability

Durability and Sustainabilty in Financial Cards

Consumers are increasingly demanding more sustainable financial cards, and Melinex® PET films offer many advantages compared to traditional materials such as PVC.

Melinex® PET has a lower carbon footprint compared to PVC and PC, and this can further be reduced with high levels of post consumer recycled rPET or with 30% bio derived content.

It is halogen free providing safer end of life options, and its durability delivers a longer life product leading to a reduction in resource usage and carbon emissions.

Melinex® PET film adds durability and longer life expectancy to financial card applications

Melinex® PET films product range

Film Type	Thickness Micron (gauge)	Properties	Typical Applications
Melinex® CORE 1	152, 307 (600, 1210)	Opaque toughened film. 1-side heat sealable, 1-side printable. Accepts UV curable and solvent based inks using offset litho and screen printing.	Ideal for use with PVC or PETG overlays in laminated card applications.
Melinex® CORE 2	152, 307 (600, 1210)	Opaque toughened film. 2-side heat sealable. Accepts UV curable and solvent based inks using offset litho and screen printing.	Ideal for use with Melinex® overlay films to produce tamper evident 100% Melinex® PET card structures. Often used in campus cards.
Melinex® 342	75, 100, 152 (300, 400, 600)	Clear 2-side heat sealable. Accepts UV curable and solvent based inks using offset litho and screen printing.	For use in applications such as inlay for driver's licenses, picture window ID's.
Melinex® LEO	110 (430)	Transparent 1-side heat sealable laser engravable film.	Suitable as protective overlay on blank or partial ink coverage. Tamper evident structure when used with Melinex® CORE2.
Melinex® SRO	100 (400) other thicknesses available on request	Transparent 1-side heat sealable, suitable for D2T2 colour personalisation via re-transfer process.	Suitable as protective overlay on blank or partial ink coverage. Tamper evident structure when used with Melinex® CORE2.

Reducing the environmental impact of Melinex® PET films

Melinex® Overlay and CORE films are now available with high levels of post consumer recycled content, reducing the overall carbon foot print and providing another life for single use plastic waste. Also in development is the use of 30% non-oil derived raw materials, reducing the carbon foot print and reducing the use of fossil fuels. Please contact Mylar Specialty Films.

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