



Your security. Our Science.

Redefining security with next-gen films for identification documents (IDs).

Makrofol® Platilon®



Covestro – a leading provider of high-performance film solutions

With over 45 years of expertise in material solutions, Covestro is a trusted leader in developing and producing high-performance [Makrofol®](#) polycarbonate (PC) and [Platilon®](#) thermoplastic polyurethane (TPU) Films for identification documents (IDs).

Our broad portfolio enables the production of [high secure ID documents](#) through advanced lamination technology. From printing and integrating sophisticated security features into an inseparable film-layer stack to high-contrast laser personalization and chip embedding, we provide complete solutions to protect modern identity and government documents.

Through close collaboration with government authorities and card manufacturers, we deliver advanced film solutions that prevent counterfeiting, ensure long-term durability, and support the evolving requirements of next-generation security technologies.



A trusted material for secure ID documents

Makrofol® ID polycarbonate (PC) Film serves as the core substrate for today's secure identity documents. Since the 1980s, polycarbonate has set the standard for highly secure ID documents worldwide. IDs made with Makrofol® feature a multi-layered structure of specialized polycarbonate films, fused through heat and pressure lamination to form a 'mono-block' structure.

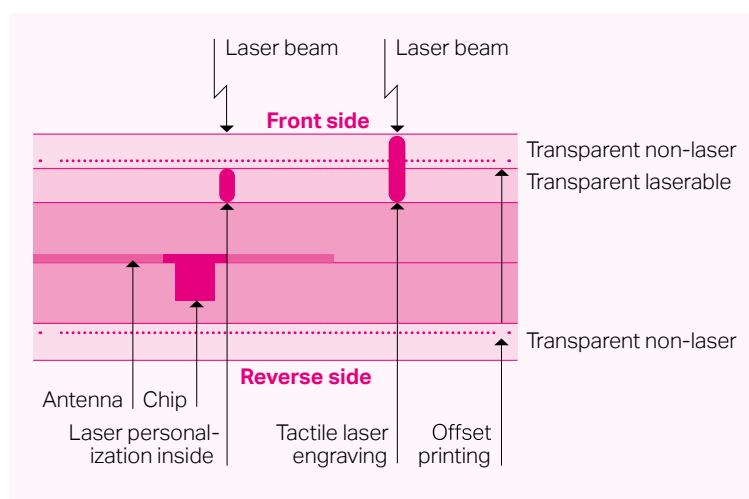
National identity cards – ensuring secure storage of personal and biometric data

Passports and border crossing cards – built for durability in high-use environments

Driver's licenses – designed for long service life and reduced need for replacements

Smart IDs with chips – supporting seamless integration of electronic and optical security features

Secure by design: Integrity of fused film layers



- **Layered security:** Enables integration of multiple optical, electronic, and tactile features
- **Permanent bond:** High-temperature, high-pressure lamination creates a monolithic structure without adhesives for lasting stability.
- **Tamper resistance:** Any attempt to separate or alter layers results in visible, irreversible damage, making forgery extremely difficult.
- **Cost-effective:** Longer document lifespan and versatile feature integration as well as cost-efficient personalization

Structure of a Makrofol® ID card

Shaping innovation with TPU film technology

Platilon® TPU Films deliver high-performance versatility across a wide range of industries by combining mechanical strength, chemical resistance, and thermal stability with exceptional design flexibility. Offered in monolayer, multilayer, or co-extruded formats, they can be tailored to meet diverse technical requirements. Their unique molecular structure unites the toughness of thermoplastics with elasticity, allowing the films to deform under stress, return to shape, and be reheated and remolded repeatedly.

Thanks to their excellent adhesion to multiple substrates, long-term flexibility, and resistance to demanding conditions, Platilon® Films offer both, durability and adaptability, making them an ideal choice for a broad spectrum of technical applications.

Platilon® ID – Enabling secure and durable passports & IDs

In the field of identity and security documents, Platilon® ID Films play a crucial role in ensuring durability, reliability, and security. Their outstanding flexibility, adhesion, and thermal behavior make them indispensable in modern passport and ID card production.

Passport hinges:	Covers & overlays:	Integration of electronics:	Synergy with Makrofol® Films:
Ensures flexibility, tear resistance and tamper protection for long-term stability.	Enhances brand protection through labels, seals and bonding layers .	Safeguards chips and antennas ; supports higher yields.	Combines with PC films for durable, flexible and secure data pages and hinges , extending document lifespan.



Key benefits of Platilon® ID

- Excellent adhesion
- High elasticity
- UV stability
- Tamper-evident hot melts
- Tailored melting behavior
- Slow change in viscosity
- High temperature stability

Security built into every layer

Security by design



Thin high-opaque white films for smart windows

Covestro's Makrofol® ID ultra-thin, high-opacity white films simplify transparent window integration in modern ID cards, delivering superior aesthetics and performance for smart window applications.

- **Simplified design:** Enables punched or laser-cut windows without extra layers or components.
- **Flawless lamination:** Prevents air entrapment and surface defects for a smooth, uniform finish.
- **Production efficiency:** Reduces material consumption and lamination time.
- **Flexible options:** Available in thicker transparent grades for punch-and-plug processes.
- **Enhanced security:** Supports advanced optical features and tamper-resistant card structures.

Hinge

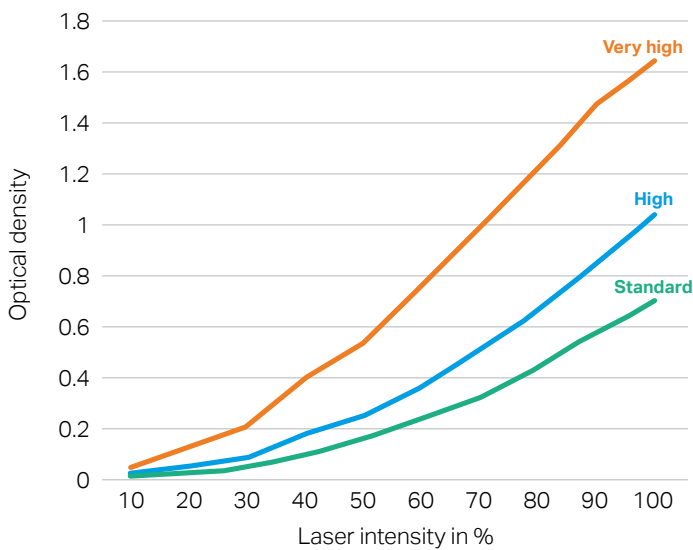
Covestro's multi-layer Platilon® ID TPU Film enhances the durability and security of next-generation passports. The film creates **strong bonds with Makrofol® ID PC Film**, forming a durable, tamper-evident data page connection that prevents delamination and component detachment.

Key benefits:

- **High security:** Lower softening temperature than PC; delamination attempts damage security elements.
- **Durability:** Fabric-like flexibility enables unlimited bending without losing integrity.
- **Tear resistance:** 35% higher tear propagation resistance compared to previous hinge generations, with secure attachment using standard sewing methods.
- **Process efficiency:** Easy lamination and integration into data pages without extra processing steps.
- **Chip & antenna protection:** Melt behavior and flexibility safeguard embedded electronics.



Laser security features



Laserable films for secure personalization

Transparent Makrofol® ID Films are available in 3 different laser reactivities:

- **Very high** (Makrofol® ID332 740006 superlaser)
- **High** (Makrofol® ID 750059)
- **Standard** (Makrofol® ID 750061)

Integrating Makrofol® ID laser engravable films in laminated PC documents enables fast, cost-effective laser personalization with optimal visibility and contrast through precisely aligned laser sensitivity and optical density.

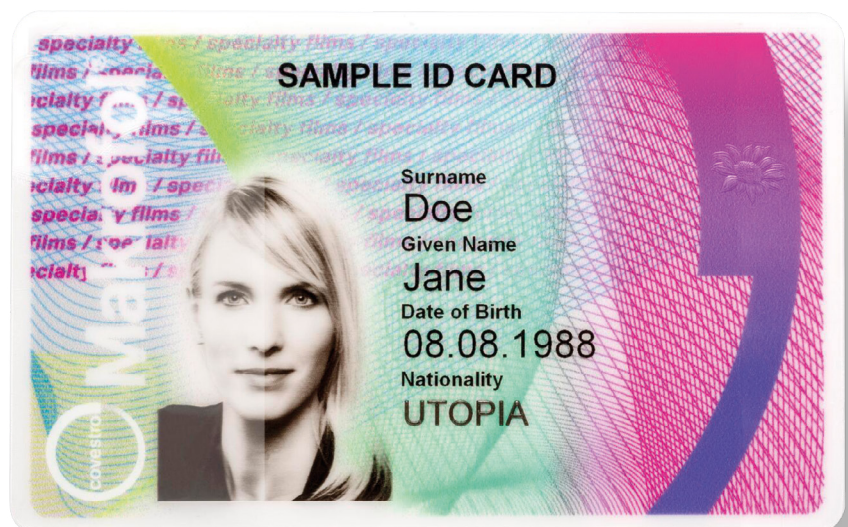
Additional laserable Makrofol® ID Film variants are available, including white films that support sophisticated layered constructions (e.g., Makrofol® ID 234).

Superlaser / Superlaser white

Makrofol® ID superlaser by Covestro is a **high-performance laserable PC film** designed for secure IDs. Its unique 3-layer structure enables sharp, high-contrast laser engraving at comparatively low laser intensity, even in layers as thin as 10 µm.

This allows deep, secure, and sharp image embedding. The film uses up to **25% less laser energy*** while delivering equivalent contrast and optical density to standard laser engravable PC films, increasing processing speed.

Available in ultra-thin, transparent, and white anti-static grades, it supports multi-layer card construction with chips and windows, enhancing durability, security, and long-term performance.



* Based on internal testing under specific conditions. Results may vary depending on application parameters.

Lasertex for white laser engraving and secure color personalization

Makrofol® ID Lasertex is a **transparent overlay film** that can be foamed by infrared lasers to create white surface engraving with high tactility. Using standard personalization parameters for laminated PC documents, the laser passes through to enable conventional black image and text engraving.

This film also enables **secure color personalization** of finished documents by embedding UV-curable inks into the card surface, producing brilliant, tamper-resistant full-color images with minimal processing effort.

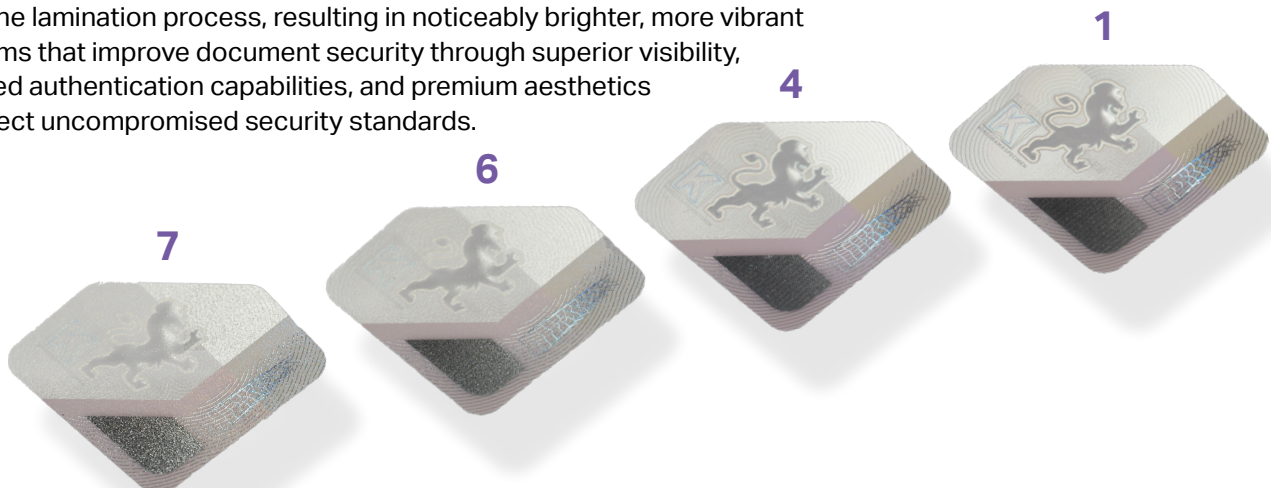


Level 1 Optical films

Brighter hologram

Harsh conditions during lamination of layered PC film stacks create structural challenges for embedded security features, particularly holograms, which must maintain their integrity throughout manufacturing.

Covestro's **Holobright** film technology preserves and **enhances hologram brilliance** during the lamination process, resulting in noticeably brighter, more vibrant holograms that improve document security through superior visibility, enhanced authentication capabilities, and premium aesthetics that reflect uncompromised security standards.





Optical Variable Material (OVM) for clear window

OVM films with dynamic **color-shifting effects** offer a powerful security feature for modern ID documents. Designed for integration into transparent window elements, this material changes color based on background or lighting, enabling quick and intuitive **Level 1 authentication**.

It also supports additional security features, enhancing tamper resistance and document integrity. Available in multiple color combinations and thicknesses; the film can be incorporated without altering existing production processes.

Multi-color UV fluorescence

Makrofol® ID PC Films enable sophisticated multiple color UV security features that can be **integrated into the clear window areas** of ID documents. These specialized films exhibit strong, **distinctive color reactions** when exposed to UV light of specific wavelengths, with different responses depending on whether the document is illuminated from the front or back side.

These **Level 2 security** features are difficult to counterfeit due to their complex optical properties. When incorporated into identity documents, they enhance security by providing additional authentication layers that are easily verifiable by security personnel using standard UV inspection equipment, while remaining invisible under normal lighting conditions.



Building security solutions together for the future

At Covestro, we provide advanced polymer films and solutions for the global card and security market. With decades of expertise, a worldwide presence, and strong technical support, we help partners meet regional needs and future challenges. Our goal is to deliver reliable materials that ensure quality, security, and long-term trust.



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[Covestro Identification Landing Page.](#)



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 Edition 2026 · Printed in Germany