



RE-THINKING THE PASSPORT WITH NEW MATERIAL CONCEPTS

Makrofol® ID **Platilon® ID**



INNOVATIVE PASSPORT CONCEPTS

Next generation passport authentication

Efficiency and convenience are major drivers for secure citizen authentication in a complex, ever changing world, where various instances of fraud can put citizen identification documents at risk. Secure citizen authentication is threatened by document alteration, counterfeits or data tampering.

To satisfy the demand for smarter and more durable identity documents with integrated security features, we at Covestro provide ID films for pioneering passport concepts. In this brochure, we unveil how we re-think the passport approach by designing a secure ID document and explain how security features used in the Covestro specimen passport facilitate the process of verifying ID documents.

Our advanced materials offer:

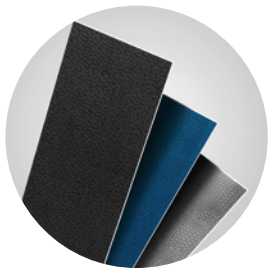
- Increased durability for passports
- Easy integration of the latest anti-counterfeiting features
- Flexibility of passport booklet designs
- Improved passport manufacturing efficiencies

At Covestro, we invent solutions for passport concepts, considering multiple security needs beyond the next decade. With many years of expertise and curiosity for innovative material solutions, we enable our customers to stay one step ahead of counterfeiters.



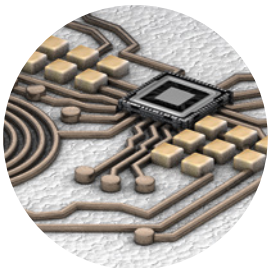
Makrofol® ID

For increased durability



Plation® ID

For outstanding flexibility in passport booklet covers with abrasion resistance and protection of embedded electronics



Flexible manufacturing of various passport designs by using Makrofol® ID & Plation® ID films



Passport data page
Makrofol® ID

Pages 4-5

Hinge material
Platilon® ID

Pages 8-9

Embedded electronics
Platilon® ID foam

Pages 10-11

Passport cover
Platilon® ID

Pages 10-11

SECURITY FEATURES IN POLYCARBONATE DATA PAGES

With rising expectations for secure and durable citizen documents around the world, the identification market is increasingly demanding level 1 security features in polycarbonate (PC) documents that enable fast and seamless traveler authentication while being extremely difficult to replicate.

Our passport data pages made of polycarbonate meet high governmental expectations for secure identification documents across the world. High durability and tamper resistance are the key reasons for passport data pages made of 100% polycarbonate. Our Makrofol® ID polycarbonate films enable the integration of all security features while pushing boundaries in efficiency and design.



1

Makrofol® ID332 superlaser transparent film for increased contrast

- Multiple-layer structure with different laser reactivities
- Increased contrast and sharpness of laser engraved elements
- No ink combustion during laser personalization process

2

Makrofol® ID 4-4 thin white high opaque film for clear windows

- Accurate punching/laser cutting in complex shapes
- Reduced cycle time and faster lamination process due to thinner film layers
- Sophisticated „window within a window“ constructions

3

Makrofol® ID349 optical variable material (O.V.M) for clear windows

- Color shifting film for fast visible verification (see pages 6-7)
- Intense UV fluorescent properties
- Possible integration of level 1 to level 3 security features

6

1

4

INTERNATIONAL PASSPORT

Typ/Type/Type **P** Kode/Code/Code **D** Pass-Nr./Passport No./PassportNo. **6408125F1710219**

1. Name/Surname/Nom **Doe**

2. Vornamen/Given names/Prénom **Jane**

3. Staatsangehörigkeit/Nationality/Nationalité **German**

5. Geschlecht/Sex/Sexe **F** 6. Geburtsort/Place of birth/Lieu de naissance **Cologne**

7. Ausstellungsdatum/Date of issue/Date d'émission **01.11.1995**

9. Behörde/Authority/Autorité **Cologne**

C3

Makrofol®

4

5

6

Makrofol® ID 1-4 transparent film for bright holograms

- Superior brightness of reflective holograms
- Clear and laserable overlay film
- Glossy surface

Makrofol® ID298 antidust film for advanced printing technology

- Substantially improved printing homogeneity
- Reduced contamination by dust particles
- Lower level of electrostatic charges




IPI™ (Invisible Personal Information) for data protection

- Encoding personal data in the portrait
- Personal data invisible for the human eye
- High technological protection of level 2 security feature



SECURITY FEATURES & SPECIALTIES

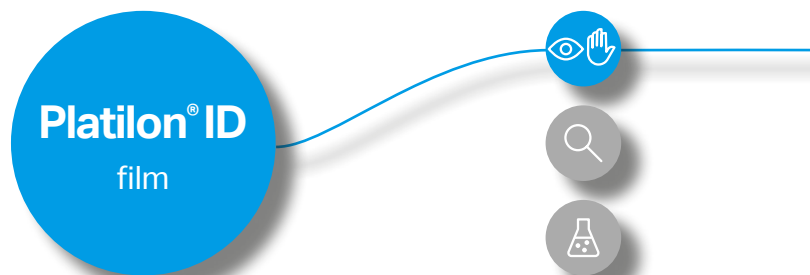
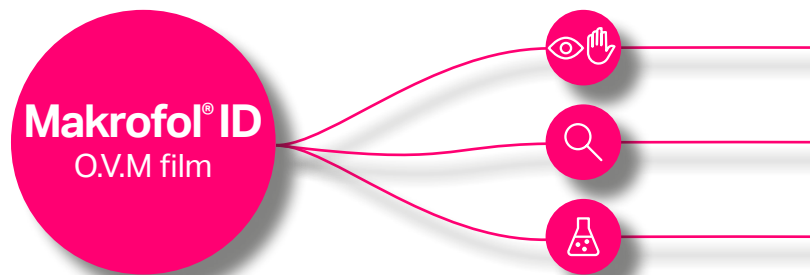
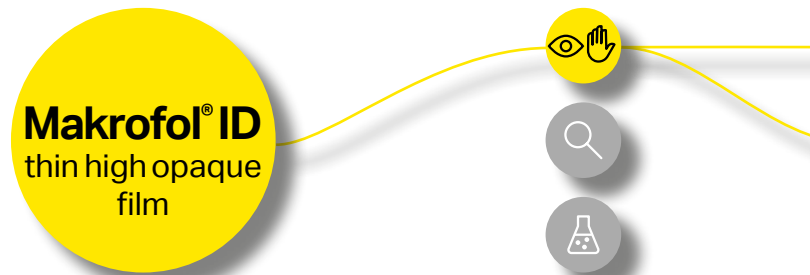
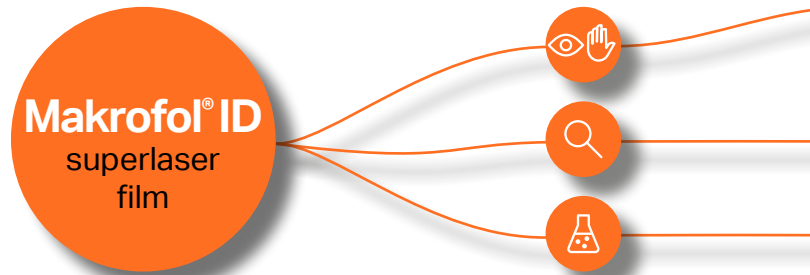
Level 1 and 2 are important for fast identification based on visible features.

-  Level 1: visible/tactile features
-  Level 2: simple equipment needed
-  Level 3: laboratory equipment needed

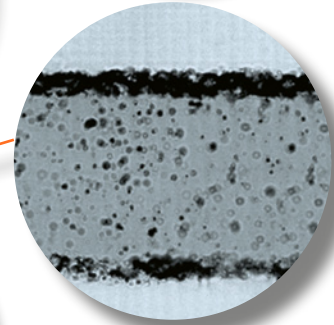
Passports play an essential role in safety both on a personal and a national internal security level. Government agencies continue to require security features in polycarbonate documents that enable fast and efficient authentication whilst being difficult to counterfeit.

Identity documents are the core of our knowhow and expertise. Covestro provides multiple innovative film solutions for level 1, level 2 and level 3 security features that ensure the originality of ID documents and the protection of personal data.

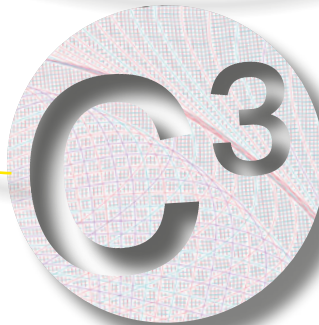
The combination of security features makes it nearly impossible to counterfeit ID documents. Covestro is offering "window within a window" in combination with Makrofol® ID O.V.M films and laser engraving with forensic data sets.



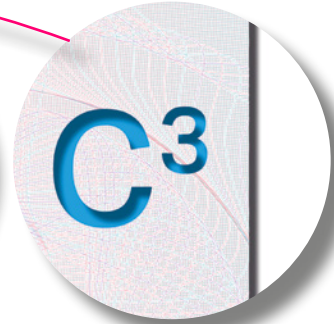
- Increased contrast/ sharpness of laser engraved image
- Micro laser engraving as security feature
- Laser reactive film in outer layer of 10µm total thickness



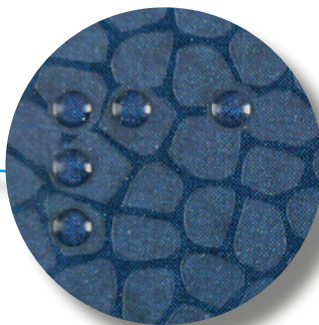
- Clear windows in complex shapes
- „Window within a window“ creation



- Color shift depending on background
- UV fluorescent properties
- Molecular structure of film



- Embossed surface structure (e.g. braille letters)
- Tilting image effect



FLEXIBLE HINGE CONSTRUCTION

Product innovation in passport hinges generates a significant technological application for polycarbonate data pages. Hinge materials in outer layers are made of hot-melt thermoplastic polyurethane film (TPU) with excellent bonding properties and a softening temperature.

The center layers consist of stiffer TPU grades. As a result, the passport data pages made of Makrofol® ID polycarbonate cannot be delaminated from Platilon® ID hinge without the destruction of components. Fabric-like properties of TPU result in a thin design and enable extreme flexibility, high tear-resistance and chip protection.

Key benefits of Platilon® ID9144 film:

- Multi-layer TPU film
- High flexibility with tear propagation resistance
- Optimal printability
- Easy to process, convert and laminate



PASSPORT eCover MADE OF NEW MATERIALS

Abrasion and tear-resistant TPU-based eCovers in various surface textures and colors

Covestro offers flexibility of design through new material combinations with high wear and tear resistant TPU-based eCovers. With an extremely robust surface, the passport eCover is practically indestructible. Various surface textures and colors as well as designs can be created via digital printing technologies. Complex graphics and security features can be easily integrated into the passport eCover.

For the manufacturing process of eCovers, no glues are needed and only a single lamination process is required. The covers can be produced with the existing equipment for document manufacturing.

Embossed symbols or texts (e.g. braille letters) can be integrated on the front side of the cover. This means that the authenticity of an document can be verified with a first tactile level of security.

Key benefits of eCovers made by Platilon® ID2255:

- Broad range of passport cover designs possible
- Various passport cover surface textures possible
- Excellent adhesion to hinge and data page
- Outstanding abrasion resistance
- Easy integration of security features into the eCover (e.g. UV fluorescent inks, clear windows, holographic features, braille letters & more)



SAFE AND SMOOTH EMBEDDING OF ELECTRONIC COMPONENTS

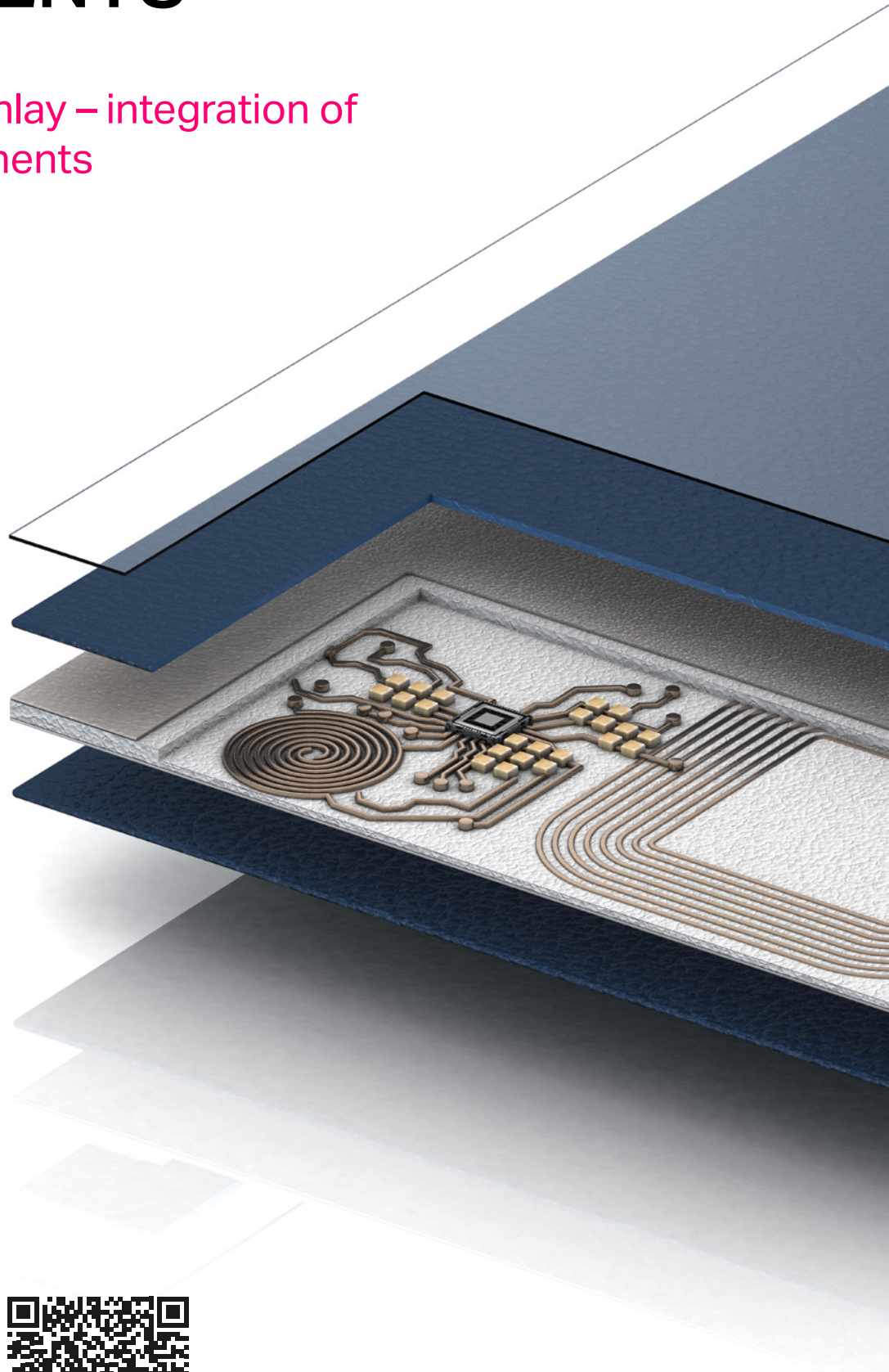
Passport eCover inlay – integration of electronic components

Re-engineered and robust material concepts create additional space for the ID document producer to integrate and protect the electronic module for digital and biometric identity verification.

Covestro offers a new solution to the ePassport cover with Platilon® ID foam. The solution is based on the latest technology, allowing safe embedding of electronic module.

Key benefits of Platilon® ID5095 foam:

- Easy integration of electronic components
- Bonding with various materials without glues
- Safe and smooth embedding of electronic components
- Permanent compression with heat



Please visit the Covestro Identification Landing Page:
[https://www.solutions.covestro.com/en/highlights/articles/
theme/applications/id_security_documents](https://www.solutions.covestro.com/en/highlights/articles/theme/applications/id_security_documents)



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