



**NEXT-GENERATION  
PASSPORT SECURITY FEATURES  
USING INNOVATIVE FILMS.  
WHY NOT?**

**Makrofol® ID**



# Fully optimized security features for reliable security documents

The ID market is increasingly demanding level one security features in polycarbonate documents that enable fast and easy authentication whilst being difficult to counterfeit.

**Market needs:**

- Personalized security features
- Fast and easy authentication
- Simplified manufacturing process of security features

**Polycarbonate Data Page for High-End Security**



Covestro has developed multiple innovative film solutions that allow integration into one next-generation passport data page concept. These Makrofol® polycarbonate films enable level one security features while pushing boundaries in efficiency and design.

**Features & benefits of Covestro films:**

- Thin white high-opaque film simplifies production of clear windows
- Creation of complex-shaped clear windows
- High-contrast laser engraving
- Extremely high laser reactivity leads to less material consumption

| Product                                 | Security Features                      | Key Benefits   | Key Features  |
|---|--|--|---|
| Makrofol® ID 4-4 thin white high-opaque | Clear window in complex shape<br>1     | <ul style="list-style-type: none"> <li>• Accurate punching and laser cutting</li> <li>• Reduced cycle time: faster lamination process due to thin layers</li> </ul>  | <ul style="list-style-type: none"> <li>• Low thickness</li> <li>• High opacity</li> </ul>   |
| Makrofol® ID 332 superlaser             | Micro laser engraving<br>2             | <ul style="list-style-type: none"> <li>• Multiple-layer structure with different laser reactivities as unique forensic safety feature</li> <li>• Reduced cycle time for laser personalization</li> <li>• More space for integration of further security features</li> <li>• Increased contrast and sharpness of laser-engraved elements</li> </ul> | <ul style="list-style-type: none"> <li>• High laser reactivity</li> <li>• Integrated security feature</li> <li>• Low thickness</li> </ul> |
| Makrofol® ID 1-4 transparent            | Bright hologram<br>3                   | <ul style="list-style-type: none"> <li>• Superior brightness of embossed holograms</li> </ul>  | <ul style="list-style-type: none"> <li>• Glossy surface</li> </ul>  |
| Makrofol® ID 298 antidust               | High-resolution security printing<br>4 | <ul style="list-style-type: none"> <li>• Substantially better printing results, especially for metallic printing inks</li> <li>• Reduced contamination by dust particles</li> </ul>  | <ul style="list-style-type: none"> <li>• Lower level of electrostatic charges</li> </ul>  |



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