



**MAXIMUM OPACITY –
MINIMUM THICKNESS.
WHY NOT?**

Clear window technology

The security/ID market is influenced by continuously improving security features, increasing safety and forgery-proofing. One recent trend is the integration of clear window technology into card constructions as new security feature. Covestro offers two material solutions for clear windows. Conventional clear window technology requires a thick transparent film (plug) which fills punched holes inside any security

document. The plug for this small inlay is punched from thick transparent polycarbonate films (sheets or narrow strips). Covestro offers thick transparent film strips in 25–30 mm width – so called narrow strips – for automatic production lines. In addition to narrow strips, Covestro provides an innovative new solution for clear window manufacturing: thin white high opaque specialty films.

Thin white high opaque

Covestro developed a very thin film with extreme high opacity, particularly suitable for clear window applications. A punched window inside a polycarbonate card or passport data page does not need to be filled with additional material while using this special film. During the lamination process, the transparent layers merge and the thin hole is filled without any irregularities on the document’s surface.

This innovative construction offers more space for transparent layers and for the integration of additional security features. The reduced thickness of the white high opaque film results in shorter lamination cycles.

Key benefits:

- Easier construction of transparent windows in security documents
- More space for the integration of further security features
- Reduced cycle time: faster lamination process due to thinner film layers

Product	Product code/thickness
Thin white high opaque films	Makrofol® ID 4-4 160016 in 30 µm and 50 µm
Thick transparent films, in sheets or narrow strips (25–30 mm)	Makrofol® ID 6-2 000000 from 480 µm up to 520 µm



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