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PLEXIGLAS® & EUROPLEX® Films
for FIM and Printing,
Automotive and Decorative Designs

Agenda

1. PLEXIGLAS® and EUROPLEX® Films - For Automotive and Decorative Designs

- Market Trends, Customer Needs and Our Solution

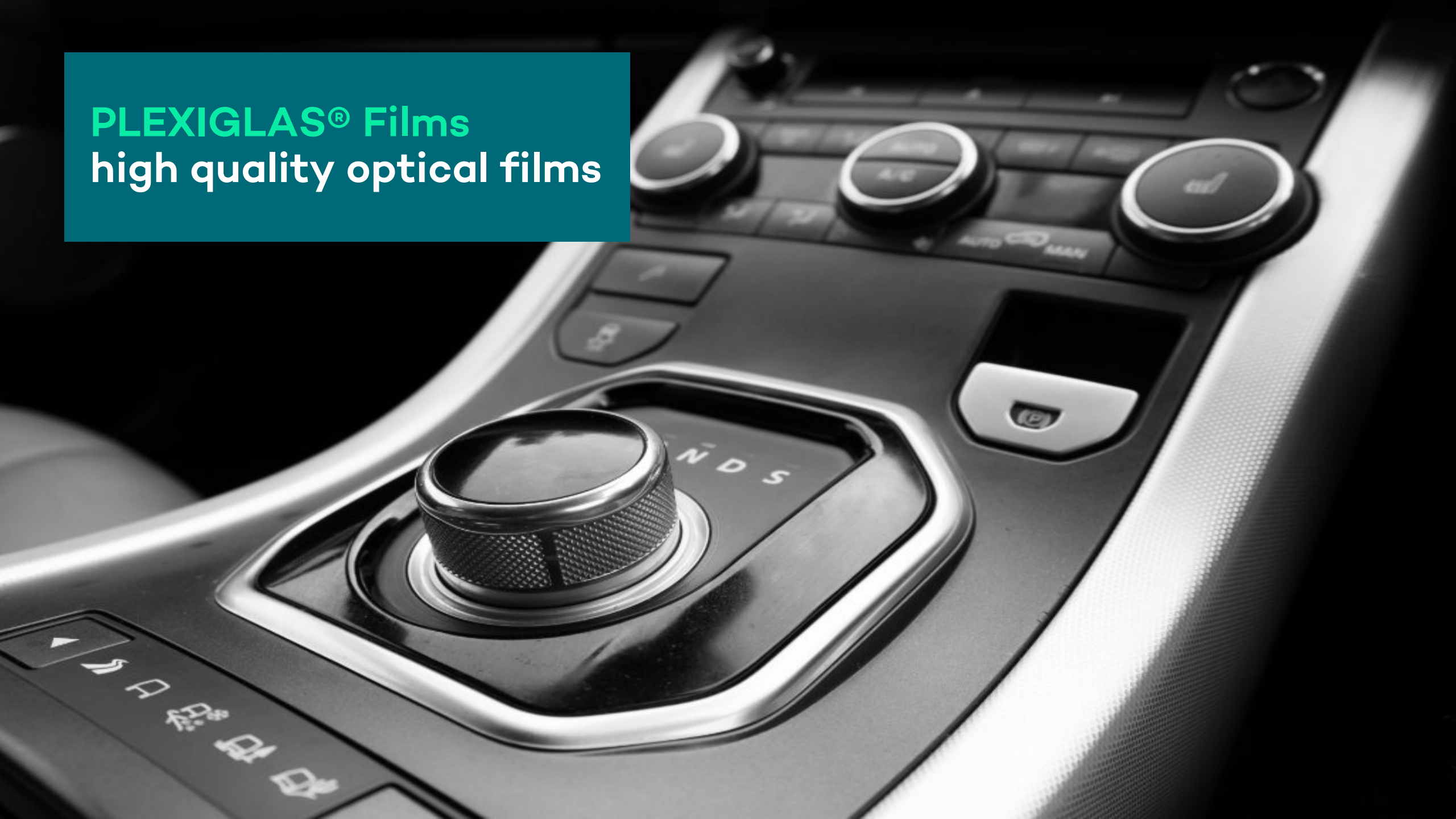
- Product Matrix

2. Key Properties

3. Processing

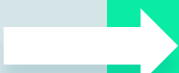
4. Applications and Product Overview

PLEXIGLAS® Films
high quality optical films



MARKET TRENDS / CUSTOMER NEEDS

TECHNICAL AND QUALITY ASPECTS

MARKET TREND		OUR SOLUTION
High optical requirements		High optical quality; clarity and gloss through polished calendar rolls; light transmittance up to 92%
Extended product lifetime		High temperature stability and high durability after several temperature cycles during processing
UV stability and protection		PMMA films offer outstanding resistance to yellowing and optical degradation over time; UV protection package available
Various finishing effects		The matte finishing side provides anti-blocking effect in printing processes, and a light scattering effect can be achieved when used in illumination applications. The finishing provides a depth effect and supports multi-layer printing
Easy and universal processability		Easy feasibility of cutting, printing and forming using various standard insert molding processes. Product maintains high dimensional stability after each process step
Scratch resistance		Natural high surface hardness without requiring additional processing such as coating applications
Excellent adhesion		Good bonding to other components made of ABS and PC; the adhesion can be further enhanced to enable high adhesion to wide range of substrates and coatings

MARKET TRENDS / CUSTOMER NEEDS

PORTFOLIO AND SERVICE ASPECTS

MARKET TREND		OUR SOLUTION
Flexibility in size		Customized solutions regarding length, width; supply in rolls and sheets; masking individually adjustable
Flexibility in thickness		Wide thickness portfolio supports different applications and finishing effects
Taylor-made designs for each individual requirement		Portfolio consists of clear and smooth or matte films with or without UV protection
Technical support		Long-year experience in producing PLEXIGLAS® and EUROPLEX® films, including know-how on further processing steps
Innovation and product development		Production facilities in combination with excellent experience allow support and development of new projects

MARKETS & APPLICATIONS

Market	Application	Possible Processing
Automotive	- Emblem - Controls, Lighting	Injection molding Gravure printing
Electronic devices	Control panel	
Interior design	- Shopfitting - Furniture	
Sports equipment	Ski	

PRODUCT MATRIX

- FIM (Film for Injection Molding)

Benefits

- Customized solutions with regard to size and thickness, as rolls and sheets
- UV resistant solution
- Easy-to-print
- Easy to bond to other materials, substrates and coatings
- High temperature stability
- Various finish effects



PLEXIGLAS® films –
A wide portfolio with
customized solutions

	PLEXIGLAS® 99524	PLEXIGLAS® OF103	PLEXIGLAS® OF063
Thicknesses	175 µm – 1 mm	250 µm	125 µm
Optics (base film)	glossy / glossy	matte / glossy	glossy / glossy
UV Protection	Medium	Medium	High
Availability	MTS	MTS	MTO
Luminous Transmittance, (D65/10°)	> 91%	87%	92%
Glass Transition Temperature	113 °C	113 °C	114 °C
Tensile Yield Stress	> 54 MPa	51 MPa	62 MPa
Nominal Strain at Break	> 35%	25 %	> 21%
Refractive Index	1.49	1.49	1.49

PRODUCT MATRIX

- Gravure Printing

Benefits

- Customized solutions with regard to size, as rolls and sheets
- UV resistant solution
- Easy-to-print
- Easy to bond to other materials, substrates and coatings
- High temperature stability
- Various finish effects



PLEXIGLAS® films –
A wide portfolio with
customized solutions

	PLEXIGLAS® OF090	PLEXIGLAS® OF014	PLEXIGLAS® OF080	PLEXIGLAS® OF016	PLEXIGLAS® OF072	EUROPLEX® 99710
Thickness	70 µm	75 µm, 53 µm	50 µm	75 µm	75 µm	50 µm
Optics (base film)	matte	clear, glossy	clear, glossy	clear, glossy	clear, glossy	clear, glossy
UV Protection	-	Medium	Medium	High	High	Very high
Availability	MTO	MTO	MTO	MTO	MTO	MTO
Luminous Transmittance, (D65/10°)	> 88%	92%	92%	92%	92%	93%
Glass Transition Temperature	102 °C	92 °C	93 °C	101 °C	107 °C	
Tensile Yield Stress	44 MPa	33 MPa	35 MPa	47 MPa	56 MPa	38 MPa
Nominal Strain at Break	> 40%	> 50%	> 50%	> 25%	> 40%	> 50%
Refractive Index		1.49	1.49	1.49	1.49	
Haze	n.a.	< 1%	< 1.5%	< 1%	2.6%	5.3 %
Stress Whitening	Yes	No	No	No	Yes	No

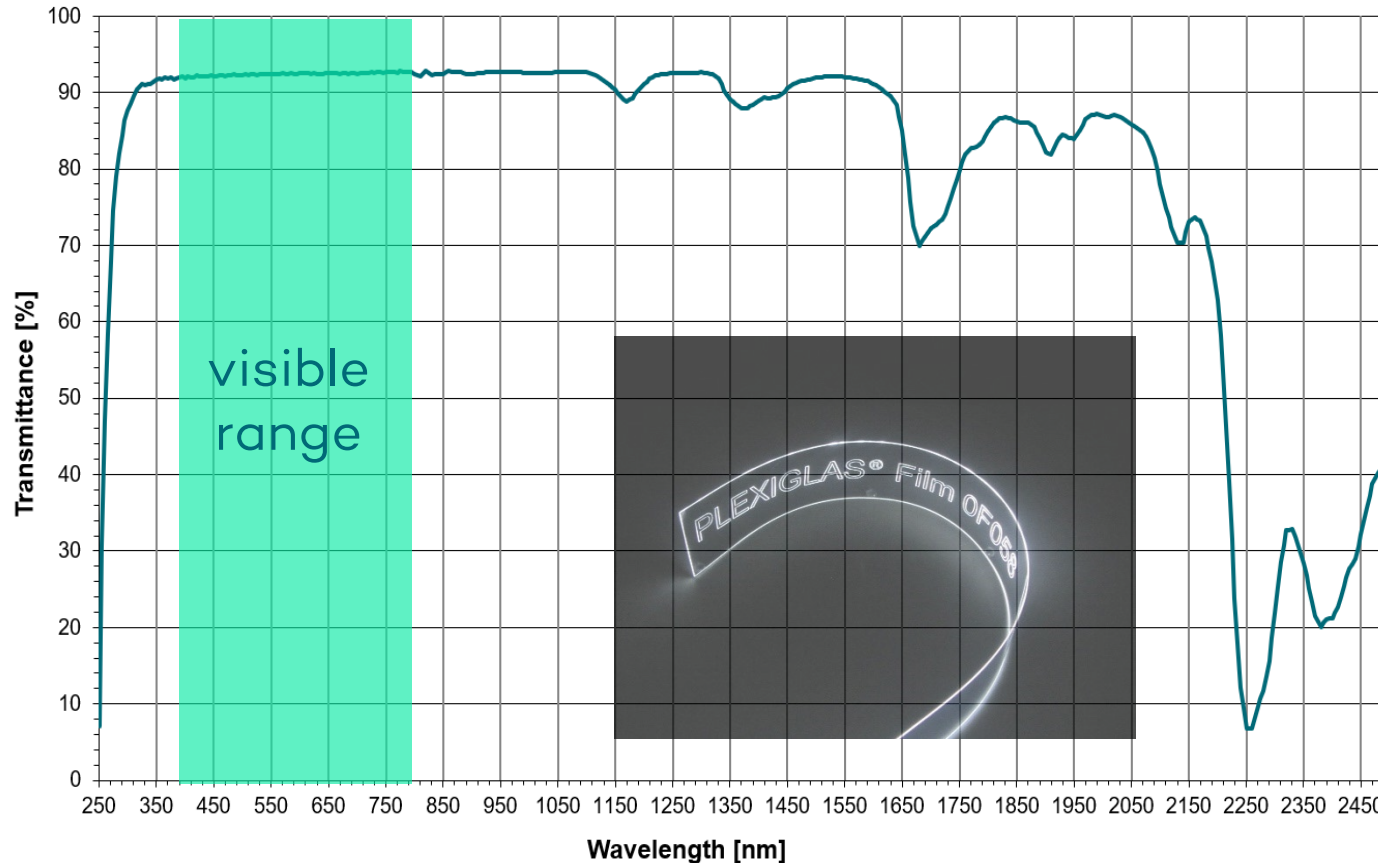


PLEXIGLAS® and EUROPLEX® HC Films Key Properties

- Optical Properties
- Weathering Resistance
- UV Protection
- Scratch Resistance

HIGH OPTICAL PROPERTIES

Spectral transmittance of a **pure** PLEXIGLAS® Film, thickness = **500 µm**

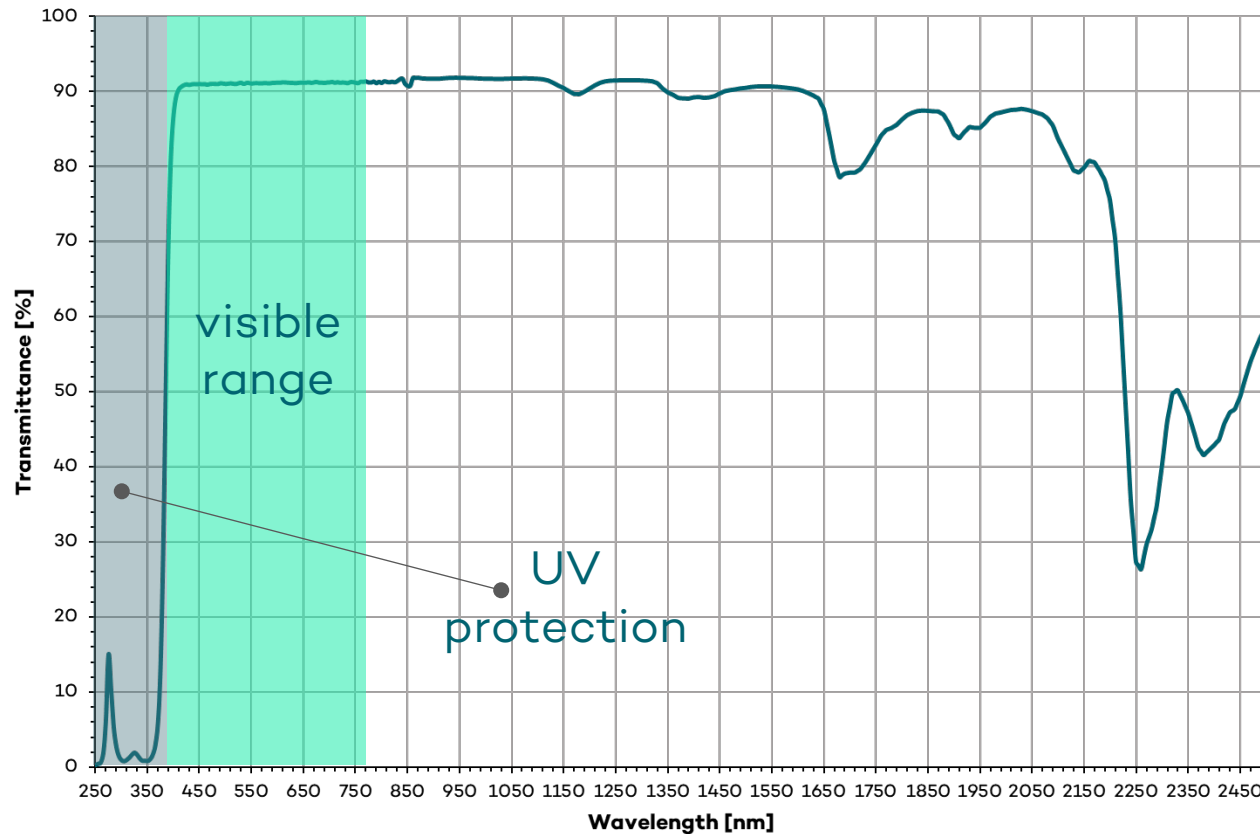


Aesthetic – High Transparency

- ▀ Optical clear quality
- ▀ Absolutely colorless
- ▀ Luminous transmittance > 92% (380 – 780 nm)
- ▀ 2x ~4% loss because of total reflection at the interfaces
- ▀ Refractive index = 1.49

UV-PROTECTION WITHOUT LOSS OF TRANSPARENCY

Spectral transmittance of a PLEXIGLAS® Film, thickness = **375 µm**



Aesthetic – High Transparency

- ▀ UV Protection up to < 5 %
- ▀ Optical clear quality
- ▀ Luminous transmittance > 92% (380 – 780 nm)
- ▀ Refractive index = 1.49

Processing of **PLEXIGLAS®** and **EUROPLEX® HC** Films

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PROCESSING – EXCELLENT PRINTABILITY

PLEXIGLAS® Films have high printability. The ink anchorage can be further enhanced by using primers.

With PMMA being a very polar polymer, a Corona treatment is not necessary for good printability.

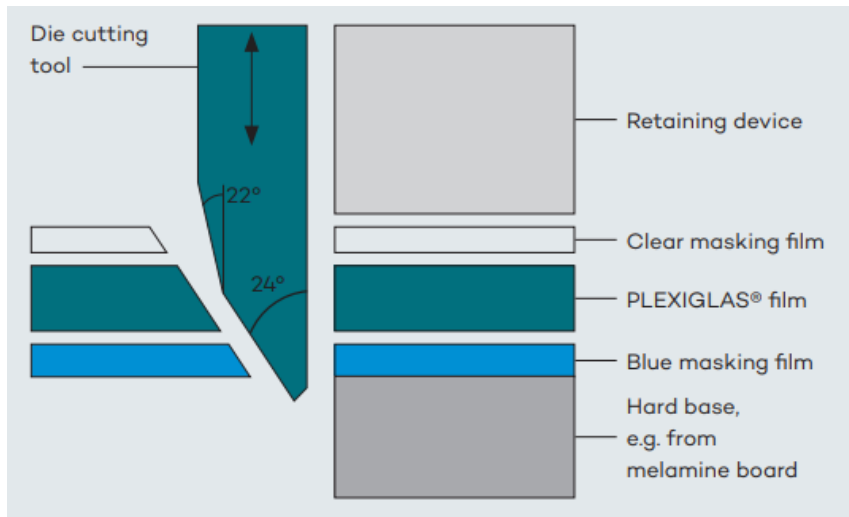
The films can be printed by roll-to-roll technologies such as:

- Flexography
- Digital printing
- Gravure printing
- Screen printing



PROCESSING - EASY TO CUT

Die cutting:



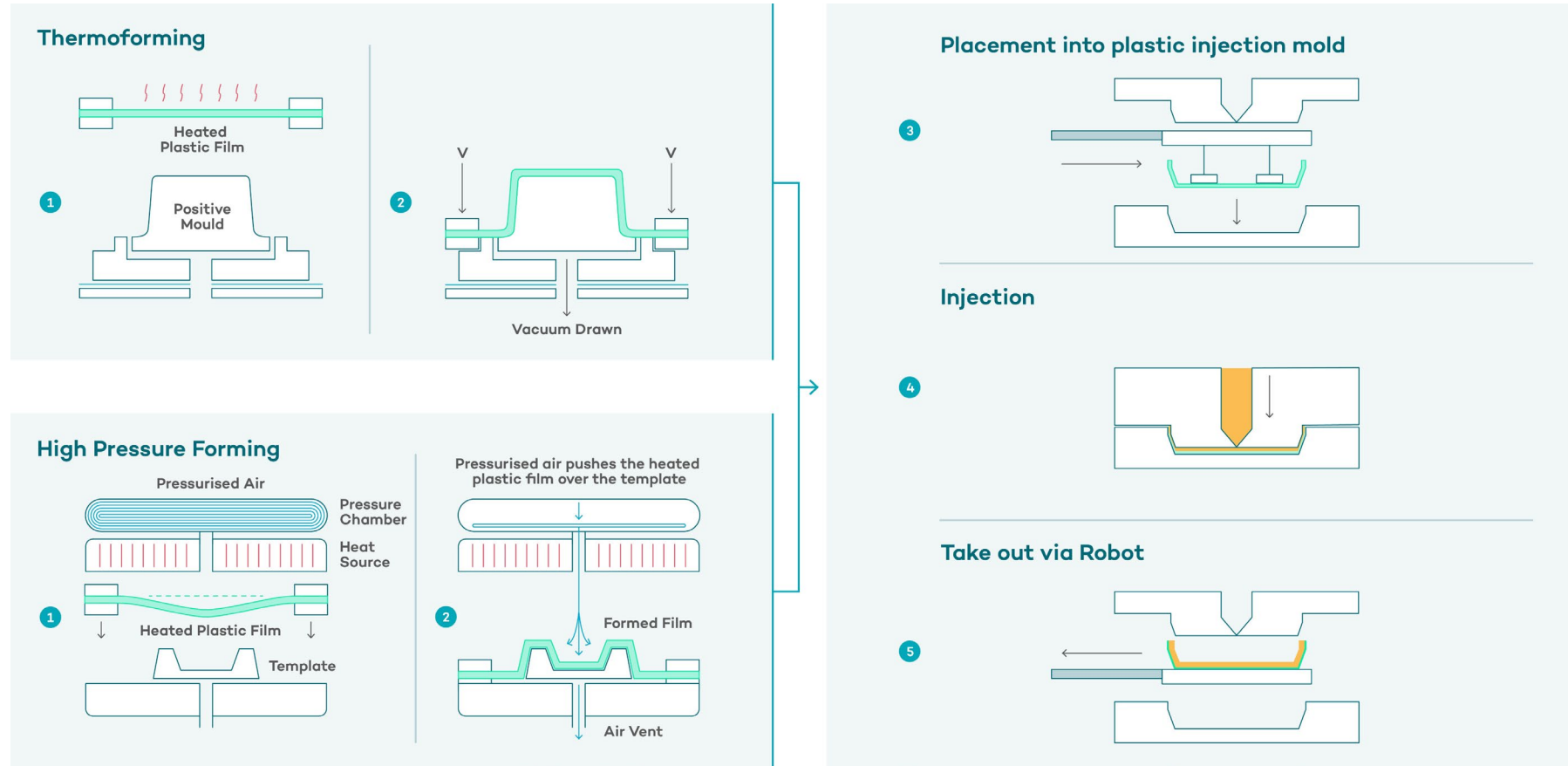
- Use a high-speed punch press
- Only use dies with sharp, unchipped edges
- At room temperature or warmer

Laser cutting:

- Clean and precise cut edges
- Well-suited for CO₂ laser
- Optimal exhaust ventilation must be provided
- Laser power: 50 Watt
- Cutting speed (125-500 µm): 60-70 mm/s
- Cutting speed (500-1000 µm): 120-150 mm/s

PROCESSING - FILM INSERT MOLDING (FIM)

Décor printing e.g. screen printing by thermoforming / high pressure forming



- Decoration with high positional accuracy
- Good forming behaviour/form stability
- Sharp-edge forming is easily possible

TECHNICAL INFORMATION

USEFUL TO KNOW

The usage of our products meet a huge variety of very different requirements.

PLEXIGLAS® films are easy to process, either as an overlay or even a facestock label, depending on the application.

Printing on PLEXIGLAS® and EUROPLEX® film is easily possible.



With a long-term experience we provide technical service, such as:

- ▀ Product portfolio support
- ▀ Processing support (also on-site)
- ▀ Customer specific product request
- ▀ Customized developments



**PLEXIGLAS®
and EUROPLEX®
HC Films**
**Applications
and Product
Overview**

TYPICAL APPLICATIONS

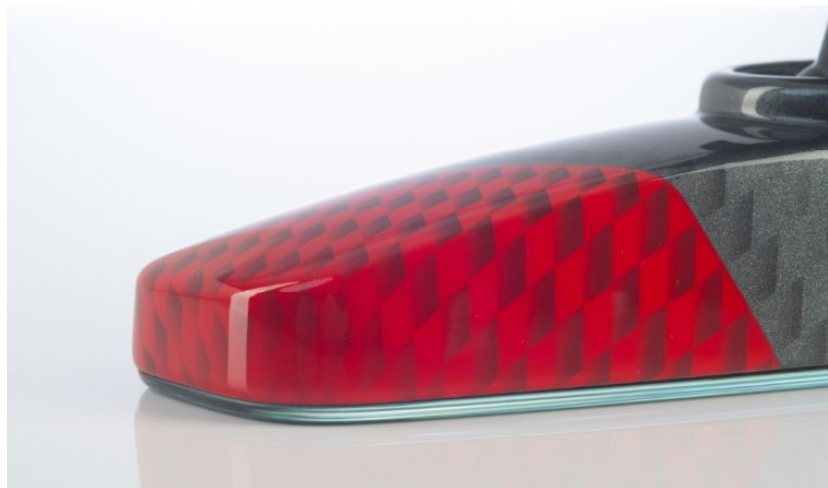
AUTOMOTIVE



Application:
Automotive - interior

TYPICAL APPLICATIONS

AUTOMOTIVE



Application:
Automotive - interior

TYPICAL APPLICATIONS

AUTOMOTIVE



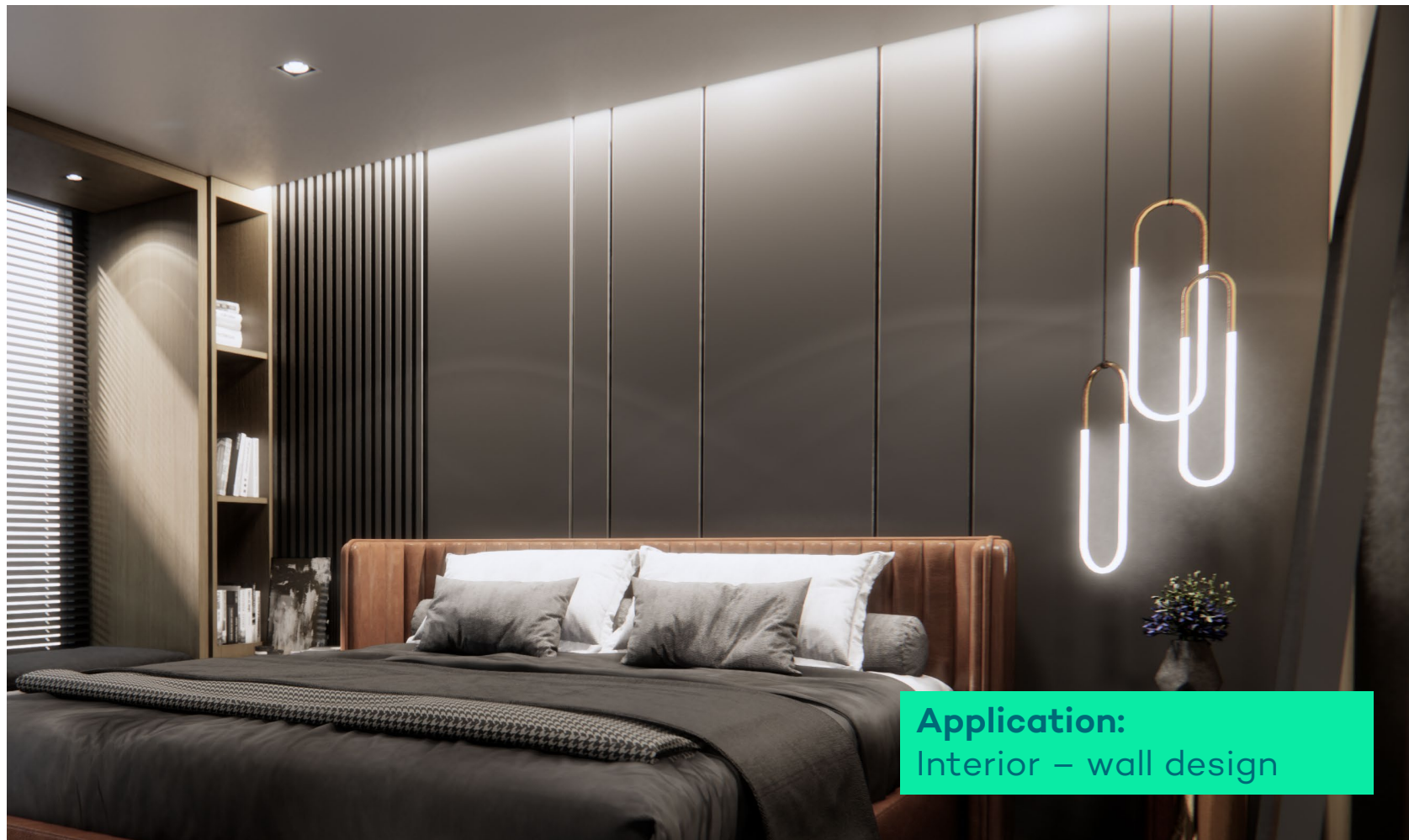
TYPICAL APPLICATIONS

INTERIOR DESIGN



TYPICAL APPLICATIONS

INTERIOR DESIGN



Application:
Interior – wall design

TYPICAL APPLICATIONS

INTERIOR DESIGN



Application:
Interior – furniture front

TYPICAL APPLICATIONS

ELECTRONIC DEVICE



TYPICAL APPLICATIONS



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PLEXIGLAS® and EUROPLEX® HC Films for Automotive and Decorative Design

SUPPORT AND CONTACT PERSON



Please scan the
QR code to
connect our
commercial and
technical support
worldwide



THANK
YOU

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