



Smart PDLC Film & Smart Glass

QUALITY AND TECHNICAL SUPPORT

Technical Support

We are dedicated not only to delivering top-quality products to our customers but also to providing exemplary service. Our commitment ensures that every facet of our offerings meets the highest standards of excellence, ensuring customer satisfaction throughout.

Consulting Services

Addressing all inquiries regarding our products.
Offering detailed product information in both Chinese and English.

01

Technical Training

Conducting training sessions covering product storage, transportation, installation, debugging, and usage precautions.

02

Project Design

Providing multiple customized project designs crafted by our professional designers.

03

On-site Instruction & Technical Support

Deploying technicians to deliver on-site guidance and resolve installation and usage issues as per customer requirements or actual conditions.

04



Quality Control

- Dedicated Teams Striving for Superior Quality
- Utilization of Advanced Facilities
- Partnership with Top-Notch Suppliers
- Implementation of Rigorous Testing Methods
- Well-Maintained & Organized Production Lines

Quality Assurance

Our products have passed rigorous tests such as RoHS, halogen testing, and glass combustion performance, and hold certifications including 3C, ISO9001, CE and other standards.

We continually enhance our processes to tackle industry-wide quality issues through improved manufacturing techniques and rigorous production controls.

We operate multiple nationwide offices and maintain longstanding partnerships with over 60 construction teams. Backed by an exceptional team encompassing R&D, design, frontline construction, and after-sales service, we deliver thoughtful, reliable products and services to our customers.



PRODUCT CATEGORY

01 **Non-Adhesive Smart Film**

02 **Self-Adhesive Smart Film**

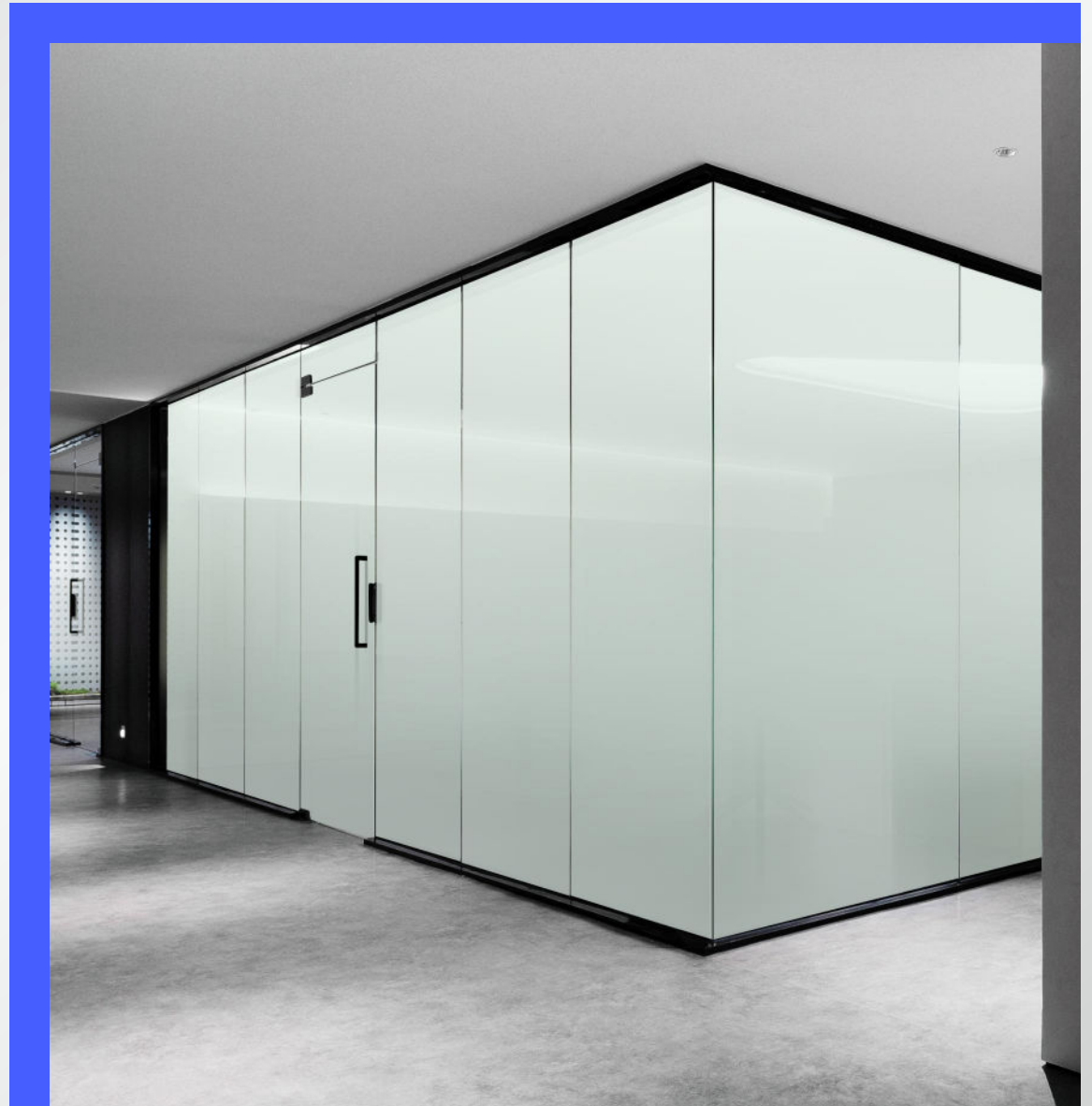
(White/Light Grey/Dark Grey/Black/Customized Color)

03 **Etched Smart Film**

(Shutter Pattern, Mountain and River Pattern, etc.)

04 **PNLC Film**

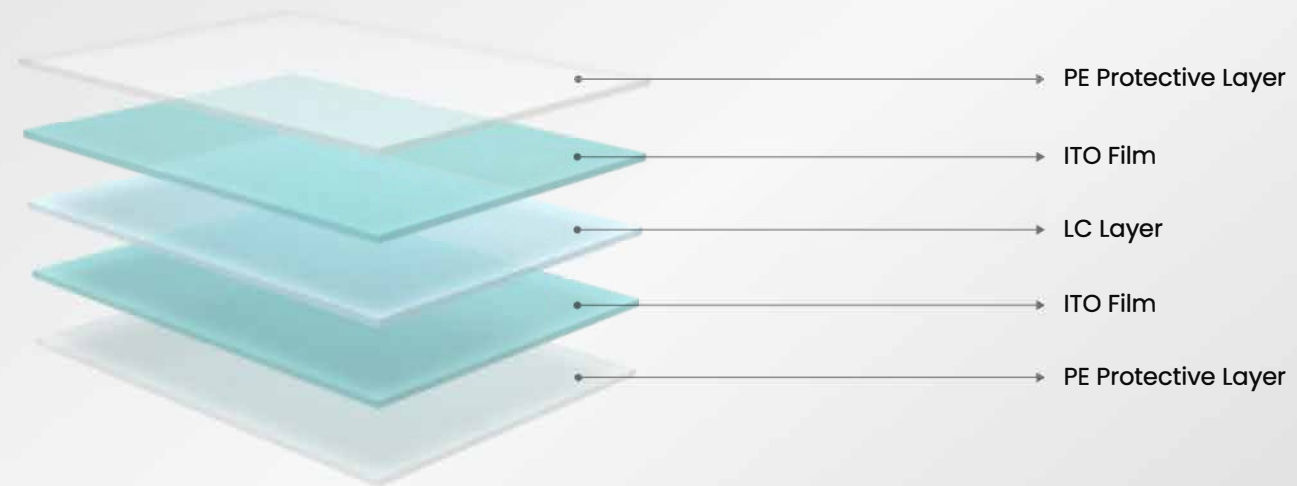
05 **ECF Film**



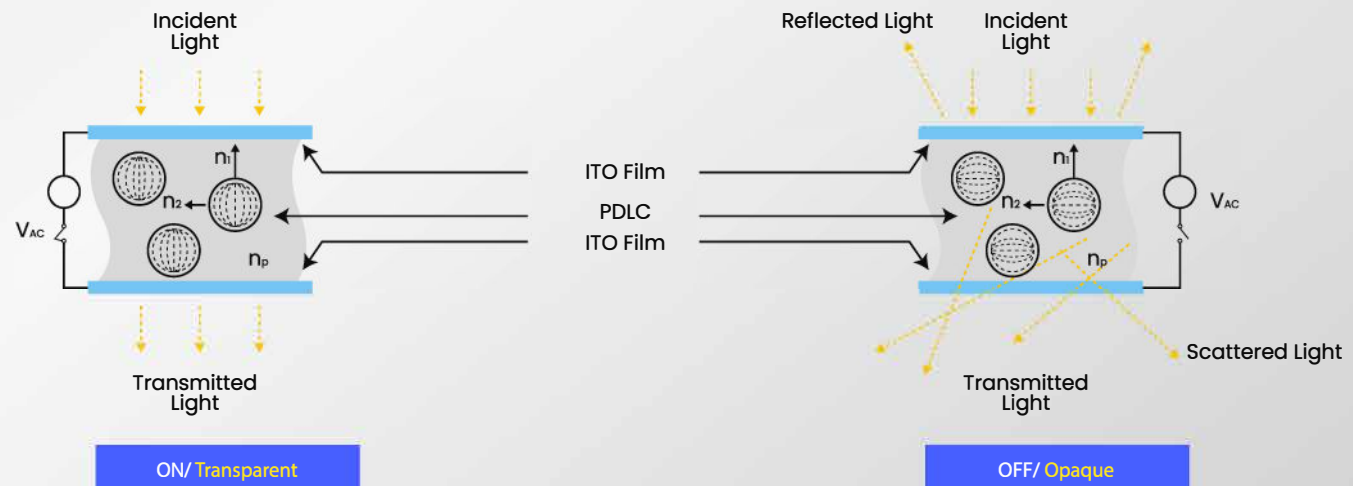
1. NON-ADHESIVE SMART FILM

Non-adhesive smart film is composed of two layers of ITO films and one layer of PDLC, which can be controlled by an applied electric field to instantly transition between transparent and opaque states.

1.1 Product Structure



1.2 Working Principle



1.3 Product Specifications

Item		Mode	Unit	Tolerance	Value
Optical Performance	Visible Light Transmission	On	%	/	>82
		Off	%	/	>65
	Haze	On	%	/	≤4.0
		Off	%	/	> 98
		Off	%	/	> 140
	Viewing Angle	On	°	/	92
Electrical Performance	Working Voltage	On	AC/V	/	48~ 65(50/60HZ)
	Response Time	On→Off	ms	/	≤200
		Off→On	ms	/	≤10
	Power Consumption	On	W/m ²	/	< 5
Shrinkage	TD	/	%	/	≤0.1
	MD	/	/	/	≤0.4
Working Principle		Power On	/	/	Clear
		Power Off	/	/	Opaque
Thickness		/	μm	±5	395
Color Difference ΔE(reflection)		Off	CIELAB	/	≤2.5
Working Temperature		/	°C	/	-20 ~ 65°C
Storage Temperature		/	°C	/	-20 ~ 60°C
Storage Humidity		/	%	/	20 ~ 60
Lifespan		On	h	/	> 80000

1.4 Advantages



Privacy Protection: Ensures privacy in diverse settings.



Safety and Anti-explosion: Provides safety measures against explosions.



Effective Rear Projection: Delivers high-quality rear projection capabilities.



Smart Control Options: Supports manual, switch, light-sensitive, WiFi, voice, remote, and mobile app controls.



Anti-UV Protection: Shields indoor furnishings from UV damage.



Quality Assurance: Guaranteed quality with factory direct shipping.

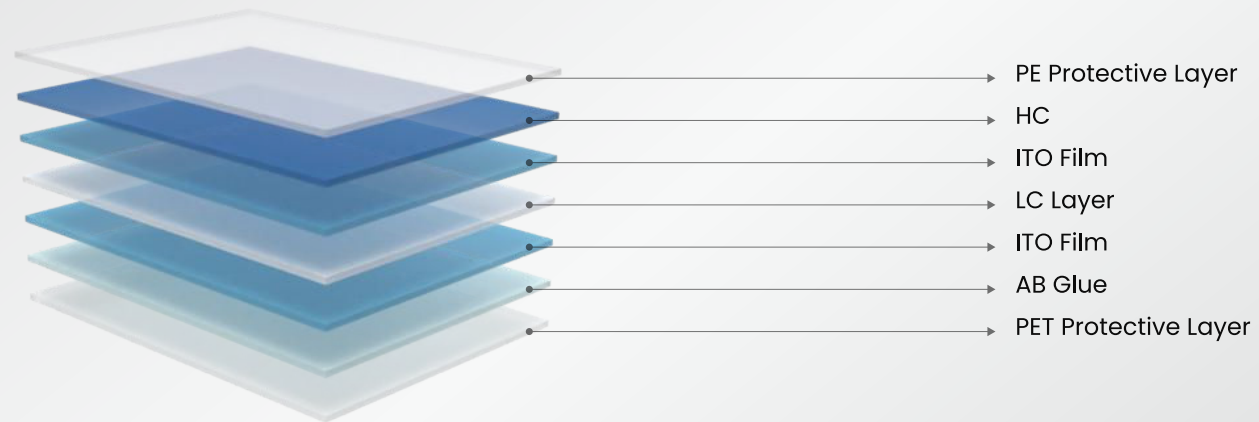
2. SELF-ADHESIVE SMART FILM



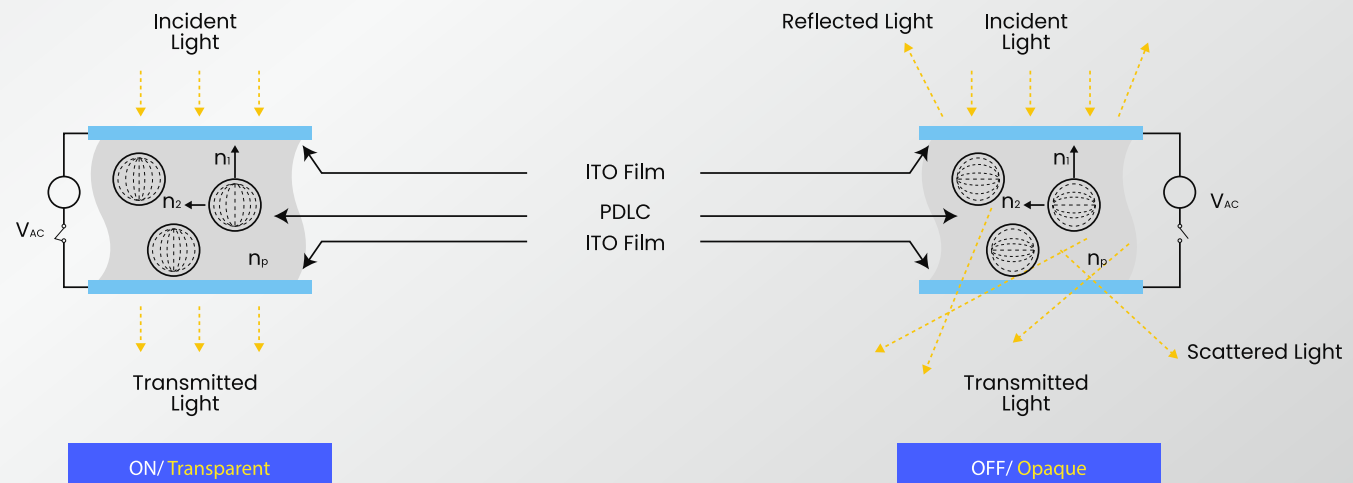
Self-adhesive smart film, built upon non-adhesive smart film, featuring optical-grade double-sided adhesive. It smoothly attaches to flat and curved glass surfaces, ensuring a convenient and quick installation process.

Besides the standard white model, options include black, dark grey, and light grey. Custom colors such as blue, green, yellow, and others are available upon request.

2.1 Product Structure



2.2 Working Principle



2.3.1 Product Specifications (White)

Item		Mode	Unit	Tolerance	Specification
Optical Performance	Visible Light Transmission	On	%	±1	88
		Off	%	±2	69
	Haze	On	%	±0.2	<3
		Off	%	/	> 98
	Viewing Angle	On	°C	/	>120
Electrical Performance	Operate Voltage	On	AC/V	/	48 ~ 65(50/60HZ)
	Response Time	On→Off	ms	/	≤200
		Off→On	ms	/	≤10
	Power Consumption	On	W/m ²	/	< 5
Shrinkage	TD	/	%	/	≤0.1
	MD	/	%	/	≤0.4
Working Principle		Power On	/	/	White Transparent
		Power Off	/	/	White Opaque
UV Rejection		/	%	/	99
Thickness		/	μm	±5	540
Color Difference ΔE(reflection)		Off	CIELAB	/	≤2.5
Working Temperature		/	°C	/	-20 ~ 80°C
Storage Temperature		/	°C	/	-20 ~ 60°C
Storage Humidity		/	%	/	20 ~ 60
Lifespan		On	h	/	> 80000

2.4.1 Advantages

- ➔ Privacy Protection: Ensures privacy in diverse settings. The visible light transmission is 69% in the OFF state.
- ➔ Safety and Anti-explosion: Provides safety measures against explosions.
- ➔ Effective Rear Projection: Delivers high-quality rear projection capabilities.
- ➔ Smart Control Options: Supports manual, switch, light-sensitive, WiFi, voice, remote, and mobile app controls.
- ➔ Anti-UV Protection: Shields indoor furnishings from UV damage.
- ➔ Quality Assurance: Guaranteed quality with factory direct shipping.

2.3.2 Product Specifications (Light Grey)

Item		Mode	Unit	Tolerance	Specification
Optical Performance	Visible Light Transmission	On	%	/	60
		Off	%	/	49
	Haze	On	%	/	<4
		Off	%	/	> 98
	Viewing Angle	On	°C	/	>140
Electrical Performance	Operate Voltage	On	AC/V	/	48 ~ 65(50/60HZ)
	Response Time	On→Off	ms	/	≤200
		Off→On	ms	/	≤10
	Power Consumption	On	W/m ²	/	< 5
Shrinkage	TD	/	%	/	≤0.1
	MD	/	%	/	≤0.4
Working Principle		Power On	/	/	Grey Transparent
		Power Off	/	/	Grey Opaque
UV Rejection		/	%	/	99
Thickness		/	μm	±5	560
Color Difference ΔE(reflection)		Off	CIELAB	/	≤2.5
Working Temperature		/	°C	/	-20 ~ 80°C
Storage Temperature		/	°C	/	-20 ~ 60°C
Storage Humidity		/	%	/	20 ~ 60
Lifespan		On	h	/	> 80000

2.4.2 Advantages

- ➔ **Privacy Protection:** Ensures privacy in diverse settings. The visible light transmission is 49% in the OFF state.
- ➔ **Safety and Anti-explosion:** Provides safety measures against explosions.
- ➔ **Effective Rear Projection:** Delivers high-quality rear projection capabilities.
- ➔ **Smart Control Options:** Supports manual, switch, light-sensitive, WiFi, voice, remote, and mobile app controls.
- ➔ **Anti-UV Protection:** Shields indoor furnishings from UV damage.
- ➔ **Quality Assurance:** Guaranteed quality with factory direct shipping.

2.3.3 Product Specifications (Dark Grey)

Item		Mode	Unit	Tolerance	Specification
Optical Performance	Visible Light Transmission	On	%	±1	45
		Off	%	±2	34
	Haze	On	%	±0.2	<4
		Off	%	/	> 98
	Viewing Angle	On	°C	/	>140
Electrical Performance	Operate Voltage	On	AC/V	/	48 ~ 65(50/60HZ)
	Response Time	On→Off	ms	/	≤200
		Off→On	ms	/	≤10
	Power Consumption	On	W/m ²	/	< 5
Shrinkage	TD	/	%	/	≤0.1
	MD	/	%	/	≤0.4
Working Principle		Power On	/	/	Grey Transparent
		Power Off	/	/	Grey Opaque
UV Rejection		/	%	/	99
Thickness		/	μm	±5	560
Color Difference ΔE(reflection)		Off	CIELAB	/	≤2.5
Working Temperature		/	°C	/	-20 ~ 80°C
Storage Temperature		/	°C	/	-20 ~ 60°C
Storage Humidity		/	%	/	20 ~ 60
Lifespan		On	h	/	> 80000

2.4.3 Advantages



Privacy Protection: Ensures privacy in diverse settings. The visible light transmission is 34% in the OFF state.



Safety and Anti-explosion: Provides safety measures against explosions.



Effective Rear Projection: Delivers high-quality rear projection capabilities.



Smart Control Options: Supports manual, switch, light-sensitive, WiFi, voice, remote, and mobile app controls.



Anti-UV Protection: Shields indoor furnishings from UV damage.



Quality Assurance: Guaranteed quality with factory direct shipping.

2.3.4 Product Specifications (Black)

Item		Mode	Unit	Tolerance	Specification
Optical Performance	Visible Light Transmission	On	%	±1	10
		Off	%	/	> 5
	Haze	On	%	±1	7
		Off	%	/	> 96
	Viewing Angle	On	°C	/	>120
Electrical Performance	Operate Voltage	On	AC/V	/	48 ~ 65(50/60HZ)
	Response Time	On→Off	ms	/	≤200
		Off→On	ms	/	≤10
	Power Consumption	On	W/m ²	/	< 5
Shrinkage	TD	/	%	/	≤0.2
	MD	/	%	/	≤0.9
Working Principle		Power On	/	/	Transparent with black
		Power Off	/	/	Black Opaque
UV Rejection		/	%	/	≥99
Thickness		/	μm	±5	560
Color Difference ΔE(reflection)		Off	CIELAB	/	≤2.5
Working Temperature		/	°C	/	-20 ~ 80°C
Storage Temperature		/	°C	/	-20 ~ 60°C
Storage Humidity		/	%	/	20 ~ 60
Lifespan		On	h	/	> 10000

2.4.4 Advantages

- Privacy Protection: Ensures privacy in diverse settings. The visible light transmission is around 5% in the OFF state.
- Safety and Anti-explosion: Provides safety measures against explosions.
- Effective Rear Projection: Delivers high-quality rear projection capabilities.
- Smart Control Options: Supports manual, switch, light-sensitive, WiFi, voice, remote, and mobile app controls.
- Anti-UV Protection: Shields indoor furnishings from UV damage.
- Quality Assurance: Guaranteed quality with factory direct shipping.

3. ETCHED SMART FILM



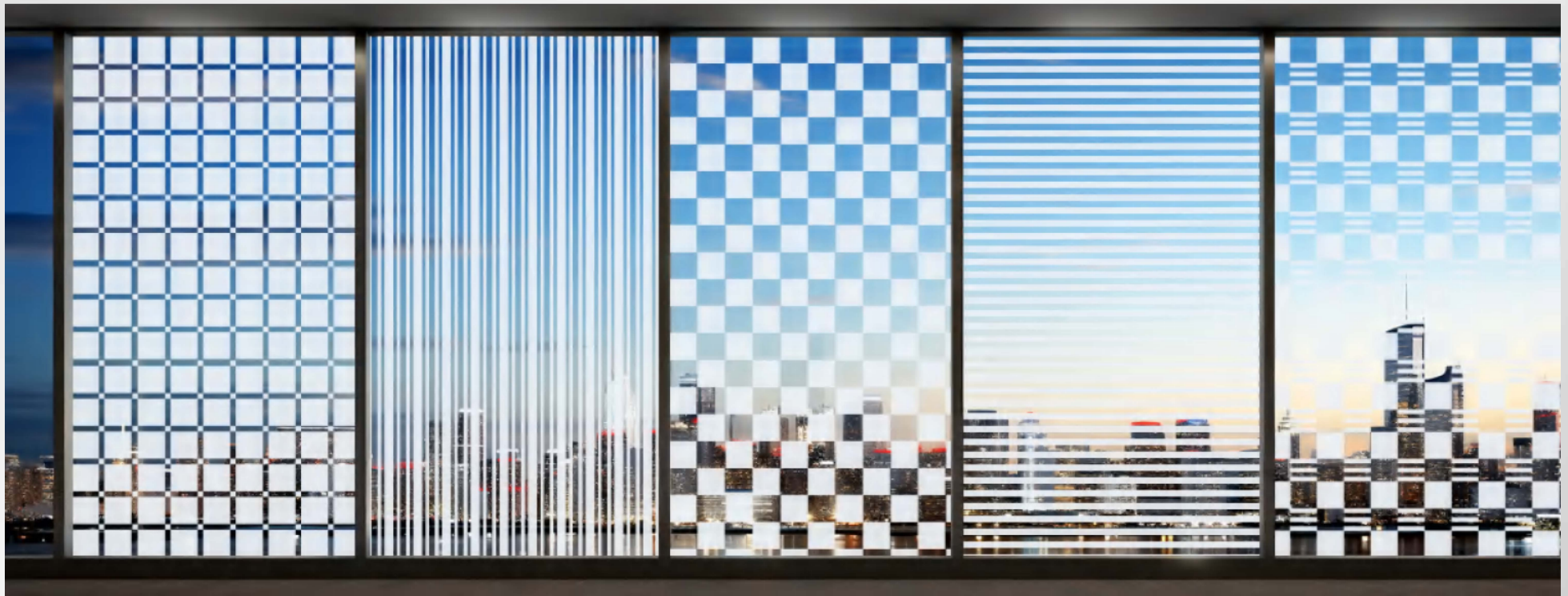
Etched smart film, also known as segmented smart film, employs a process where the ITO substrate is laser etched before PDLC coating, resulting in nearly invisible segmentation lines. It allows users to customize various switchable patterns, including artistic designs.

3.1 Features

- Custom width and length;
- Specific areas of glass surface can be set to be switched ON/OFF;
- Reprogrammable to offer alternative operating areas;
- Supports manual, switch, light-sensitive, WiFi, voice, remote, and mobile app controls.

3.2 Application

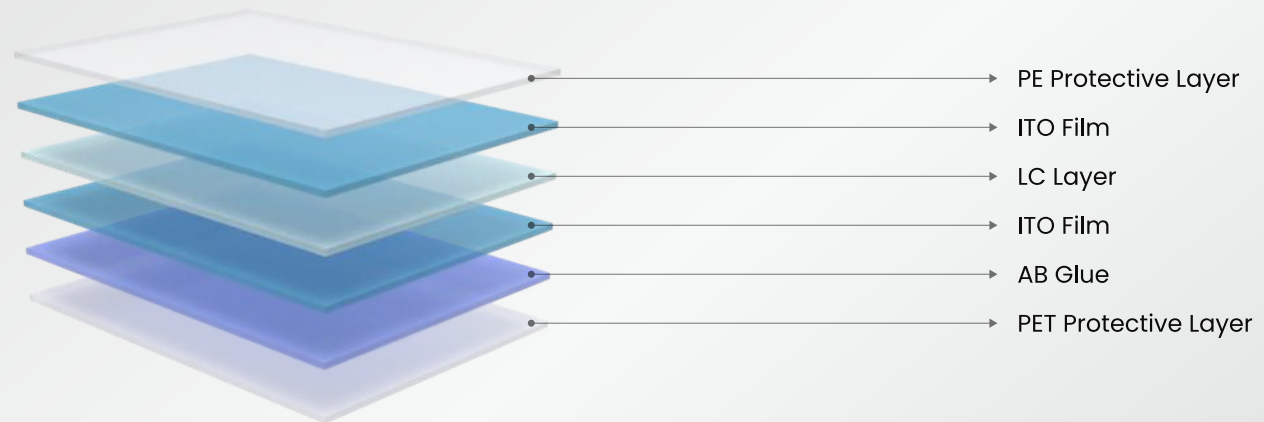
Combining privacy with aesthetic appeal. Achieve adjustable transparency and an elegant etched appearance for enhanced privacy. Ideal for modern spaces like offices, hotels, shops, clubs, villas and other places seeking both functionality and visual sophistication.



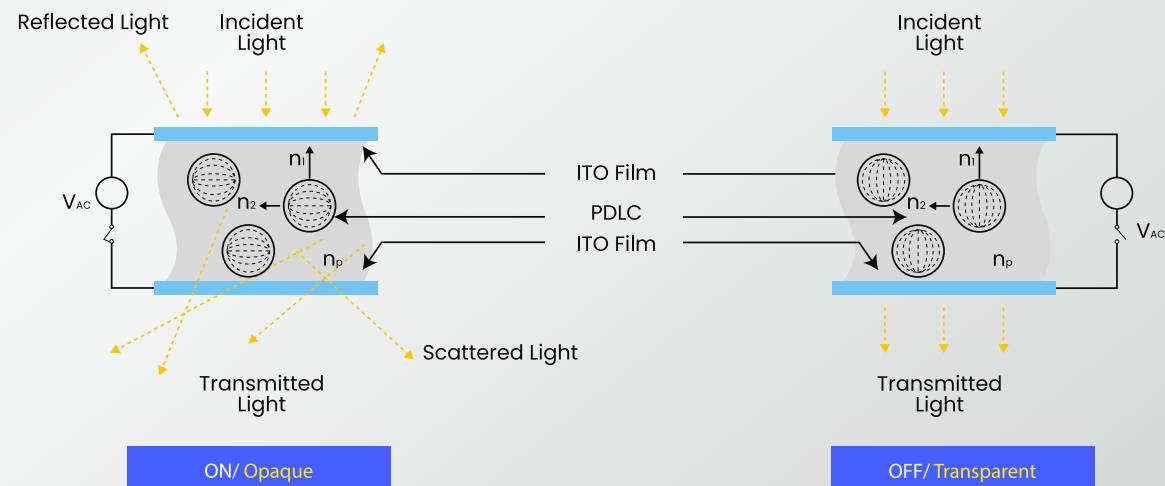
4. PNLC FILM

PNLC smart film is also known as adverse PDLC film. Unlike regular PDLC smart film, PNLC film operates in reverse: it turns opaque when powered on and transparent when powered off.

4.1 Product Structure



4.2 Working Principle



4.3 Product Specifications

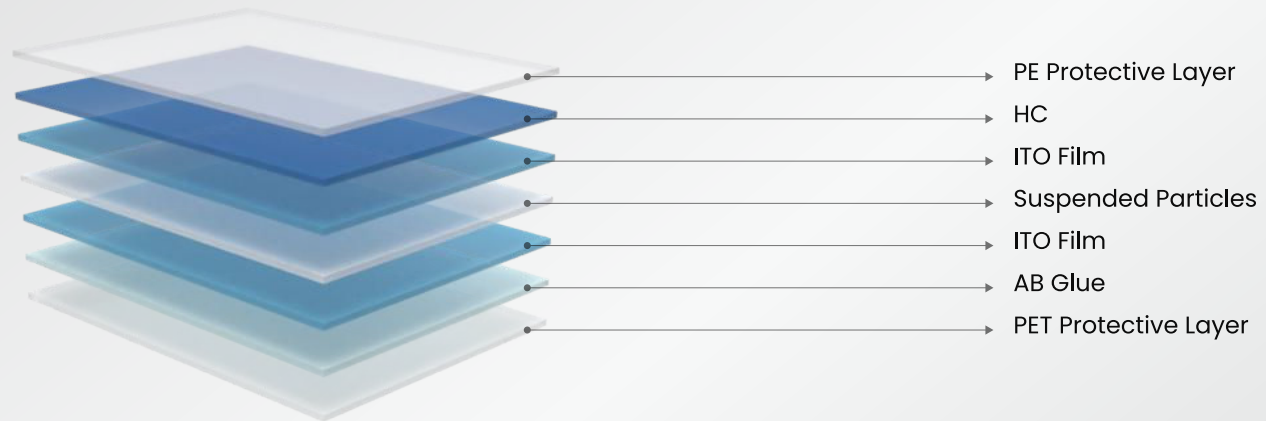


Item		Mode	Unit	Tolerance	Value
Optical Performance	Visible Light Transmission	On	%	/	88
		Off	%	/	9
	Parallel Light Transmission	Off	%	/	80
		On	%	/	7
	Haze	Off	%	/	10
	Haze	On	%		92
Electrical Performance	Working Voltage	On	AC/V	/	48~65V
	Response Time	On/Off	S	/	0.5
	Power Consumption	On	W/m ²	/	5
Weather Resistance Test		/	hours	/	2000
Working Principle		Power On	/	/	Opaque
		Power Off	/	/	Clear
Thickness		/	mm	±10	0.26
Color Difference ΔE (reflection)		Off	CIELAB	/	≤2.5
Silicon Peeling Force		/	g	/	10
UV Rejection		/	%	/	99%
Working Temperature		/	°C	/	-20 ~ 65°C
Storage Temperature		/	°C	/	-20 ~ 60°C
Storage Humidity		/	%	/	20 ~ 60
Working Lifetime		On	Hours	/	>80000
Max Spec					1450×3000mm
Roll Spec					1.2/1.45×30/50m

5. ECF FILM

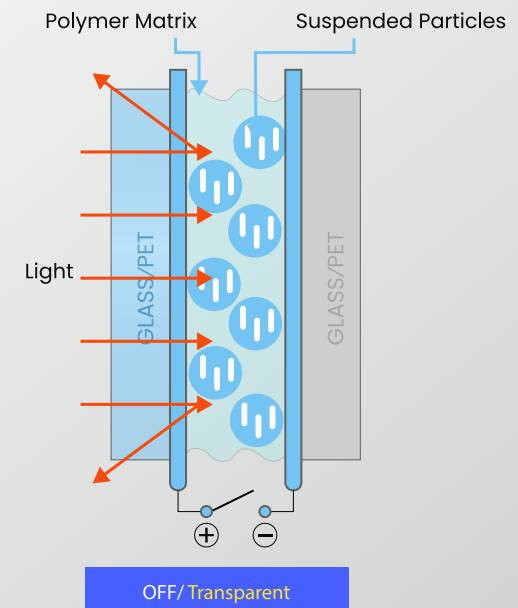
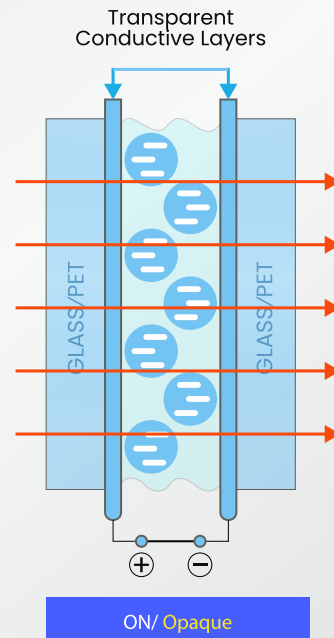
The ECF film allows dynamic control of light transmission through the application of voltage regulating transformer, offering excellent versatility in a variety of fields. The microscopic particles suspended in the fluid layer within the material show blue in the OFF state and transparent in the ON state.

5.1 Product Structure



5.2 Working Principle

This principle uses electroactive nanoparticles between conductive films to modulate light transmission by adjusting particle arrangement based on different voltage levels.



5.3 Product Specifications

Item	Dark Type	Light Type
Visible Light Transmittance	1%~40%	10%~60%
Solar Heat Gain Coefficient	0.05~0.38	
UV Protection	Max 99.9%	
Haze	≤5%	
Switching Speed	≤1 sec	
Product Size(Roll Or Cut-To-Fit Film)	Width: 0.3~1.8 m, Length: ≤ 500m	
Durability Under Extreme Temperature	-20 ℃~90 ℃	
Power Consumption(W/m2)	1~5 W/m2.hr	
Operating Voltage	AC 0~120V	

5.4 Advantages



Offer precise control over light transmission via electrical voltage, providing adaptable shading and privacy solutions across various applications.



Effectively block 99% of UV rays, safeguarding interiors from solar radiation and preserving furnishings and artwork.



Help reduce interior heat gain, which not only enhances overall comfort but also significantly improves energy efficiency within the space.



Available for combination with not only glass but also plastic substrates, and its flexibility enables effortless application on curved surfaces.



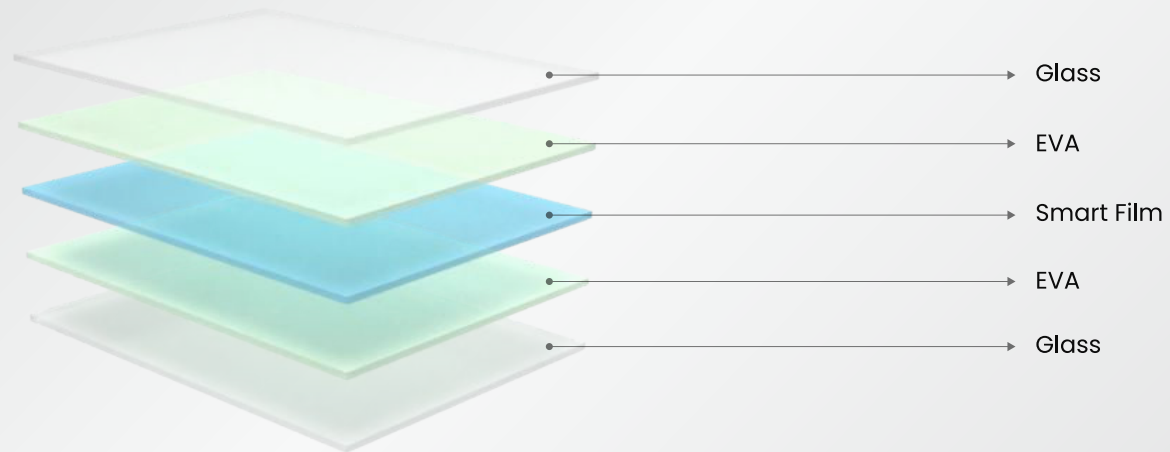
When turned off, the films display a stylish blue tint, offering a unique aesthetic. When activated, they switch to a transparent state, maximizing natural light and visibility.

6. SMART GLASS

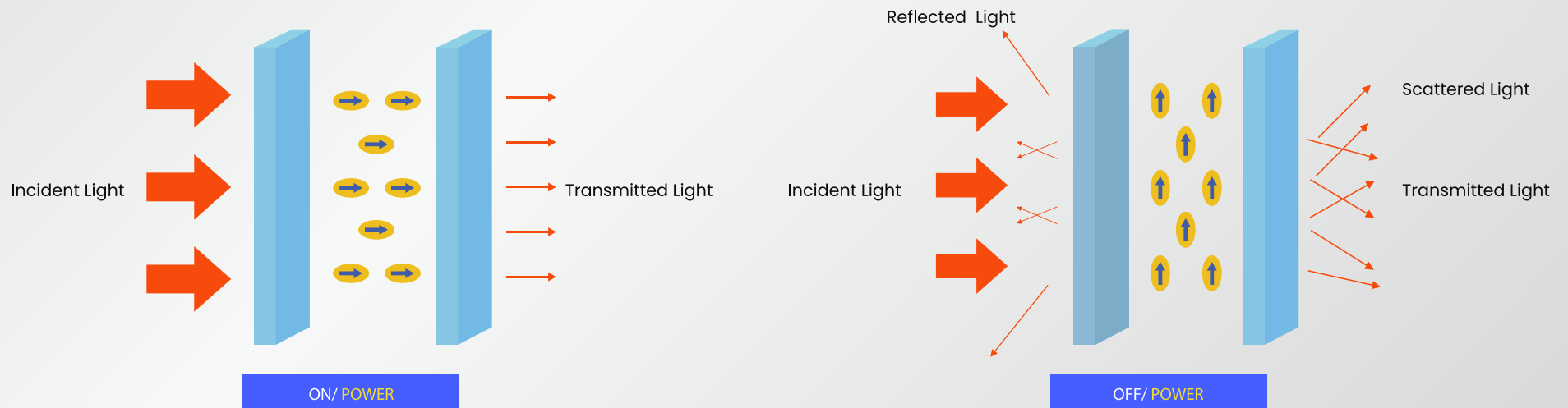


Smart glass, also called switchable glass or privacy glass, features an innovative sandwich structure combines PDLC film between two glass layers, allowing instant switching between opaque and transparent states, which can be widely used in room partitions, curtain walls, glass doors and windows.

6.1 Product Structure



6.2 Working Principle



6.3 Advantages of Smart Glass Films



We utilize top-tier automotive-grade float glass raw materials to ensure stable and reliable glass quality from the source.



Using high-transmittance, low-haze, ultra-wide temperature smart film we produce, combined with specialized EVA film with over 99% UV blocking and over 95% cross-linking, resulting in low power consumption and high weather resistance of the smart glass.



We offer custom production of smart glass in various sizes, colors, thicknesses, structures, shapes, and functionalities to meet diverse customer needs across different scenarios.



We are capable of producing extra-large smart glass panels with a maximum size of 3*6 meters, while ensuring haze uniformity of the products remains below 1%.



By employing vacuum bag laminating, we reduce haze and enhance the visible light transmittance of smart glass, ensuring clean edges, no bubbles, and a high aesthetic appeal for our products.



We ensure fast, efficient, and high-quality deliveries with a monthly production capacity of up to 15,000 m², supported by one semi-automatic double-edge trimming machine and two semi-automatic packaging machines.

7. PRODUCT APPLICATIONS

