WANSHUN-Window Film Series Introduction

Shantou Wanshun New Material Zhaofenglin Technology Co., LTD.

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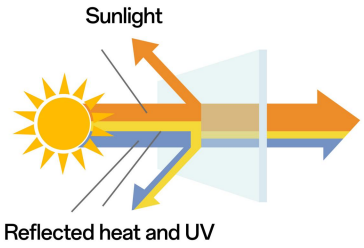
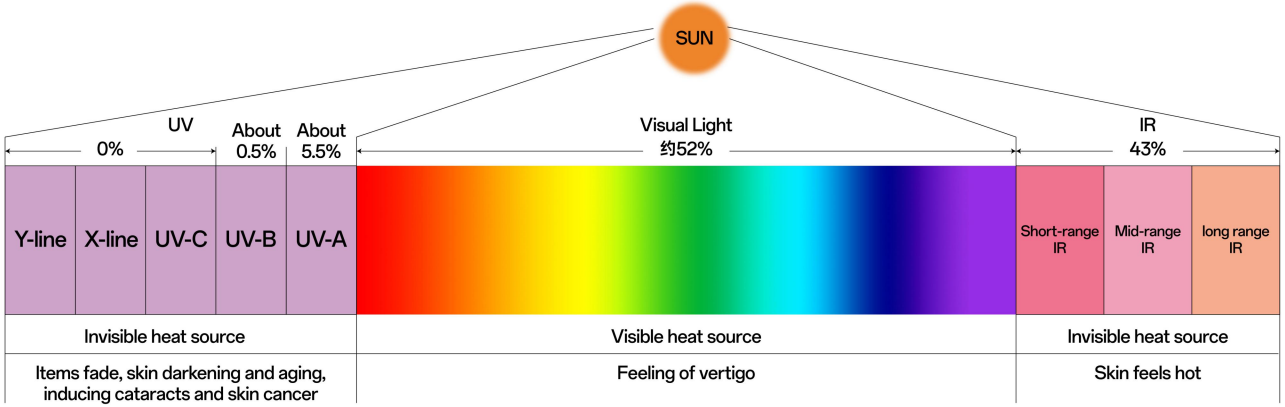
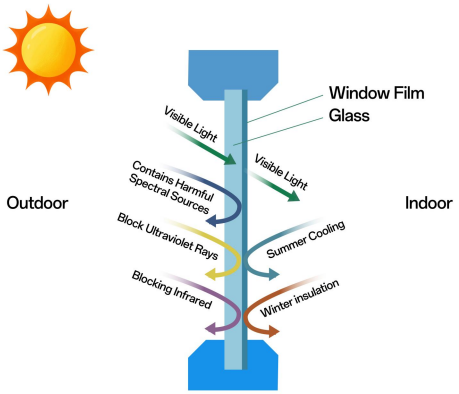
Operating Principle of Photochromic Window Film

Principle of Operation: (1) Allow visible light to enter (2) Block and reflect solar heat and ultraviolet rays

Application Scenario: (1) Architectural Insulation Film (2) Automotive Insulation Film







Photochromic Film Structure

- **HC Wear-Resistant Layer (Red)**

Scratch-resistant, enhances impact resistance.

- **Metal PET Layer (Orange)**

Filters glare from sunlight and vehicle headlights; adjustable visible light transmittance and heat insulation.

- **Composite Adhesive Layer (Yellow)**

Different metals, oxides or nano thermal insulation functional layers are attached to the base material layer through different technical processes to reflect back the infrared rays of sunlight, thus achieving the effect of thermal insulation and saving fuel.

- **Functional Layer (Green)**

Maintains clarity, resists UV damage, and ensures strong adhesion.

- **PET Layer (Cyan)**

The layer is polyester fiber optical film with UV defense ability, the film can isolate 99% of UVA and UVB in sunlight, so as to achieve the role of protecting car interiors and car passengers from UV rays. High transmittance and low haze.

- **Installation Adhesive Layer (Blue)**

There is a good combination with PET, in the event of a certain external impact, energy-saving explosion-proof film can adhere to the broken glass to protect the car occupants.

- **Release Film (Purple)**

Protective layer removed during installation.

Photochromic Film

- Blocks over 99% of UV rays and 80% of infrared heat. Reduces solar radiation transmission by 85%, improving energy efficiency.
- Achieved the National Class A Energy-Eaving Certification.
- UV-sensitive dynamic adjustment of clarity.
- Excellent resistance to hydrolytic oxidation.
- Explosion-proof, heat-insulating, and high-definition.

Energy Saving Rating Standard

National Class A Energy-Eaving Certification

Energy Saving Rating	Technical Requirement	
	Shading factor(Sc)	Visible transmittance(T_{vis})
1	Sc≤0.60	T_{vis}≥60%
	Sc≤0.52	T_{vis}≥35%
	Sc≤0.30	T_{vis}≥15%
2	Sc≤0.52	T_{vis}≥15%
3	Sc≤0.60	T_{vis}≥10%
Low-E Product	The thermal emissivity ε between 4.5μm and 25μm is lower than 0.15, meaning the reflectivity in this range is greater than 85% (GBT 18915.2).	

Model	VLT	g (Total Transmittance of Sunlight)	shading coefficient (0.89)	Energy saving level
W3580B	35.93%	41.92%	0.47	1
W5080B	45.81%	44.76%	0.50	1
W7580B	64.86%	51.54%	0.58	1

Photochromic Film — WB Series Data Sheet

Model	W7580B		W5080B		W3580B		W2580B	
State	Normal	Discolor	Normal	Discolor	Normal	Discolor	Normal	Discolor
Total Solar Energy Transmitted (%)	52	45	46	43	44	36	36	33
Total Solar Energy Reflected (%)	11	11	11	11	15	15	20	20
Total Solar Energy Absorbed (%)	37	44	43	46	41	49	44	47
Total Solar Energy Rejection (%)	40	46	45	47	47	54	55	57
Haze (%)	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Visible Light Transmitted (%)	**70**	**40**	**48**	**35**	**35**	**25**	**28**	**18**
Visible Light Reflected Exterior (%)	9	9	11	11	18	18	23	23
Visible Light Reflected Interior (%)	8	8	8	8	15	15	21	21
Glare Reduction (%)	18	45	39	60	61	72	69	80
Solar Heat Gain Coefficient	0.5	0.45	0.43	0.41	0.4	0.36	0.35	0.33
Shading Coefficient	0.58	0.51	0.49	0.46	0.46	0.42	0.4	0.38
Infrared Rejection (%)	**81**	**81**	**81**	**81**	**83**	**83**	**85**	**85**
Ultraviolet Rejection (%)	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99

- **Product features: intelligent** light control, magnetron sputtering, high heat insulation
- **Note:** Product discoloration data test conditions: at noon on a sunny day, the sun shines directly on the adhesive surface.

Application Field

◆Energy-saving project renovations for enterprises and public institutions

◆Commercial office buildings, high-end residential properties

◆Car owners, automotive film shops, 4S dealerships

Transportation: automobile front gear, side and rear gears, trains, airplane windows, cruise ships and other means of transportation.

Building curtains: building doors, windows, partitions, outdoor canopies, airports, hotels, schools, public places and all other buildings.




Light-Controlled Heat-Insulating Film
Construction Case (Building)


Wanshun Chairman's Office


Kstar International Logistics

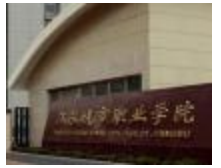

Wuhan International Plaza


Wuhan Xudong Street Pure Steam Age Restaurant


Shantou Waima Road No.2 Elementary School


Country Garden


CITIC Golf Club


Jiangsu City Vocational College


chain hotels

Royal Hotel

Conrad Hotel


China Merchants Plaza, Shekou, Shenzhen

BoC


Suizhou Zhongshan General Hospital

ICBC


public security booth


SZSE

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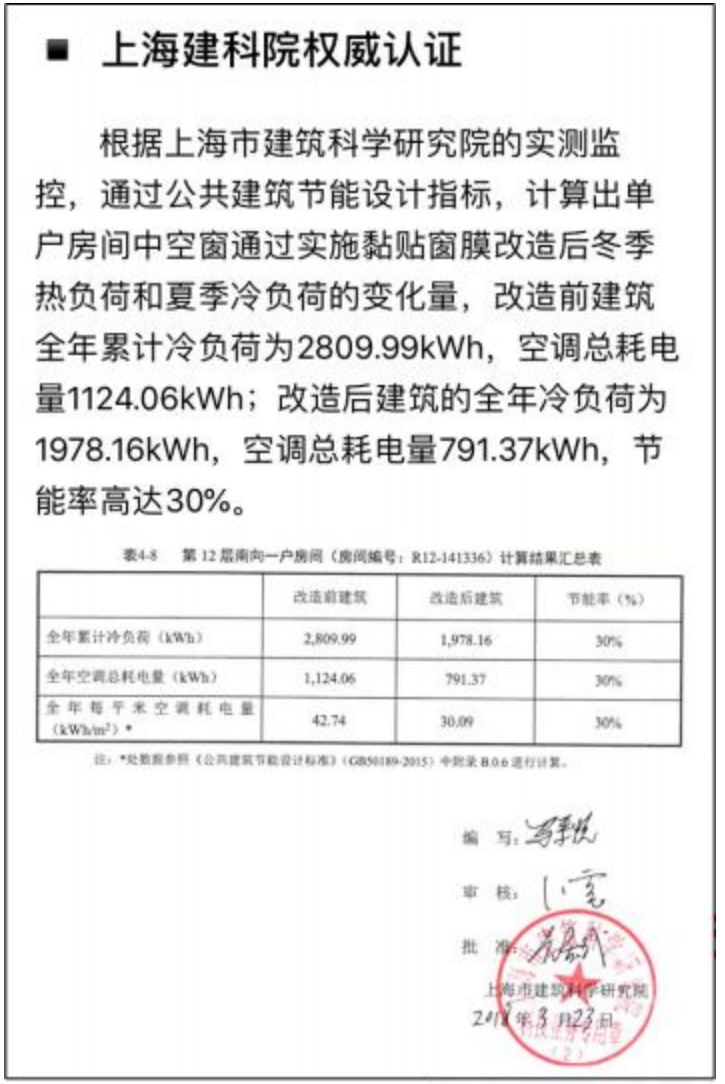
Green Hotel Application Case

Performance Analysis:

Wanshun has launched a green hotel campaign to address the common pain points in hotel buildings, such as excessive sunlight exposure and air conditioning energy consumption due to large open windows and large ventilation. And in March 2018, the first batch of five-star hotels such as Hilton Conrad, Intercontinental Ruijin and Anlu Zhujiajiao carried out energy-saving renovation.

As certified by the authoritative organization Shanghai Academy of Construction Sciences, after the completion of the green hotel renovation, the air conditioning energy consumption can be effectively reduced, the annual cumulative cooling load is reduced by 30%, and the total annual air conditioning power consumption is saved by 30%.



■ 上海建科院权威认证

根据上海市建筑科学研究院的实测监控，通过公共建筑节能设计指标，计算出单户房间中空窗通过实施黏贴窗膜改造后冬季热负荷和夏季冷负荷的变化量，改造前建筑全年累计冷负荷为2809.99kWh，空调总耗电量1124.06kWh；改造后建筑的全年冷负荷为1978.16kWh，空调总耗电量791.37kWh，节能率高达30%。

表4-8 第12层南向一户房间（房间编号：R12-141336）计算结果汇总表

	改造前建筑	改造后建筑	节能率（%）
全年累计冷负荷（kWh）	2,809.99	1,978.16	30%
全年空调总耗电量（kWh）	1,124.06	791.37	30%
全年每平米空调耗电量（kWh/m²）*	42.74	30.09	30%

注：*轮数据参照《公共建筑节能设计标准》（GB50189-2015）中附录B.0.6进行计算。

编 写：

审 核：

批 准：

上海市建筑科学研究院

2018年3月23日

Fengtai Power Supply Company
Photochromic Film Project

July 17th	10:32
	
7th floor, no film applied. 38℃	9th floor, film applied. 32℃

July 17th	12:58
	
7th floor, no film applied. 37℃	9th floor, film applied. 33℃

July 17th	14:56
	
7th floor, no film applied. 34℃	9th floor, film applied. 31℃

Summary:

The difference in indoor temperature between with and without film is 3~6℃.

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Comparison of light comfort before and after applying film

Before film application

After film application

Before film application

After film application

Light-Controlled Heat-Insulating film can change the visible light transmission rate with the intensity of UV rays, so that the indoor light is soft, providing a natural lighting, energy efficiency and heat control, including a full range of solutions for architectural glass.

Thanks

Shantou Wanshun New Material Zhaofenglin Technology Co., LTD.