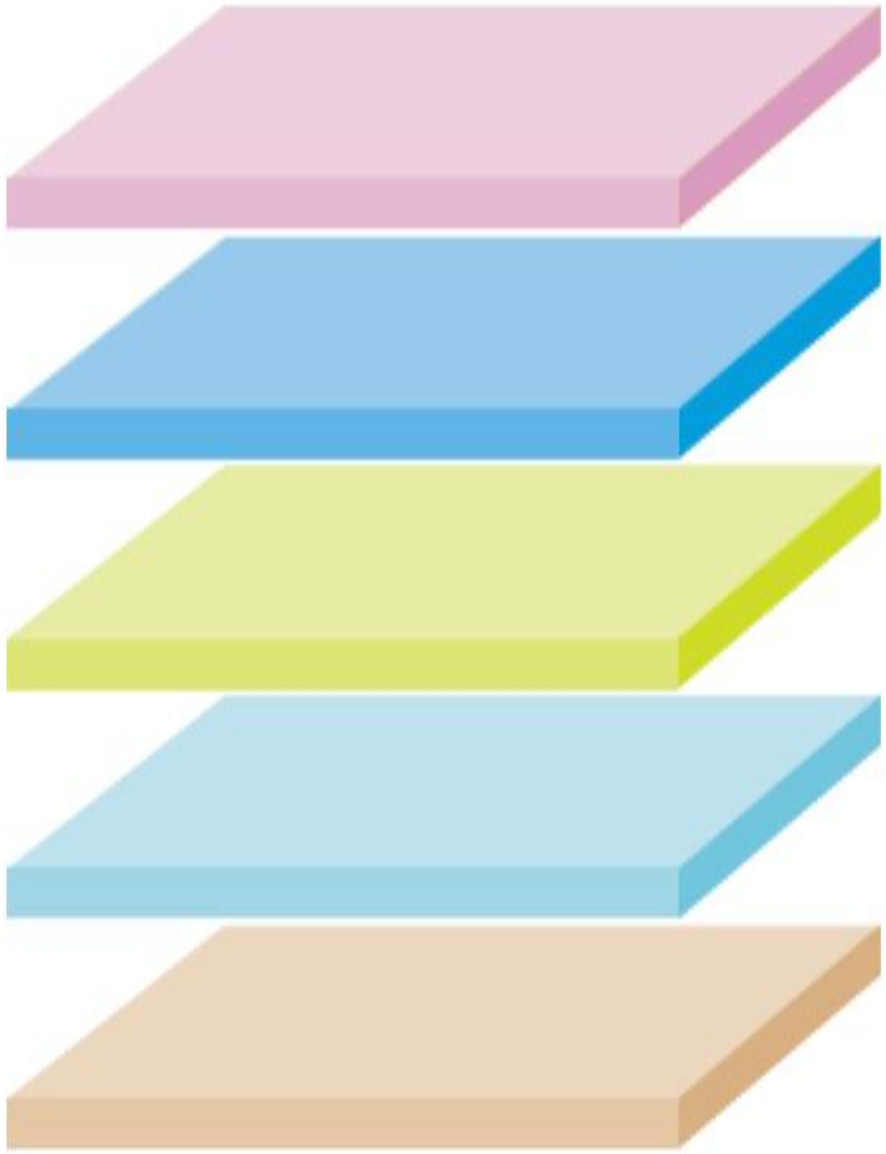
Product Introduction of Paint Protection Film X-175T

Guangdong Enxun Photoelectric Technology Co., Ltd.

Catalogue

1 Product structure and materials



Ultra high transparency PET film -50μm

Using PET raw film with haze<1% and clarity>99.5% that is super transparent and has high flatness, endowing the repair coating with high brightness and flatness.

Double anti dense repair coating -7μm

Hydrophilic coating, anti morning light Shuangjie oil pen, and anti dart carburetor cleaning agent, with excellent weather resistance.

TPU substrate -175μm

Aliphatic polyurethane film, using Kaiyang SMM301, the particles used in the base film are produced by **Lubrizol in the United States**, with a glass transition temperature of 0 ℃, and excellent low-temperature construction performance and weather resistance. The base film is clear, ensuring ultra-high brightness of the product.

Installation layer -30μm

Using **American Ashland adhesive 951059**, with a thickness of 30μm, it has good mounting performance and weather resistance.

Matte release film -92μm

High matte release film, with a light transmittance of less than 10%. This thickness and matte finish are modeled after American car clothing, giving the product an overall texture.

2 Product Performance

Project	Test method	Tool	Index	Describe
Use layer thickness	Remove protective film and matte release film	Thickness gauge	212±8μm	7.5mil
Initial adhesion force	Peel strength of mirror coated steel plate for 20 minutes	Tensile testing machine	20±5N/in	Measuring the climbing speed of product adhesion to determine the edge wrapping performance of the product
Holding Power	Peel strength of mirror coated steel plate after 168 hours	Tensile testing machine	25±5N/in	Measure the stability of product adhesive strength
elongation at break	ASTM D-882	Tensile testing machine	≥250%	The larger the value, the longer it can be stretched

2 Product Performance

Project	Test method	Tool	Index	Describe
Elastic modulus	ASTM D-882，Take 10% elastic modulus	Tensile testing machine	200±50 Kgf/cm²	The larger the value, the harder the product
Repair layer fracture elongation	ASTM D-882	Tensile testing machine	≥95	The larger the value, the less likely the coating is to crack
Repair performance	Scrape a fine copper brush with a load capacity of 200g/cm2 30 times and repair it with hot water at around 70 ℃	Copper wire brush, hot water	No abrasions	The repair performance of hot water is superior to that of hot air
Rain spot resistance performance	Place the template of the product on the rooftop for 15 days and clean it with clean water	Painted cover plate model, rainwater	No abrasions	/

2 Product Performance

ProjectZ	Test method	Tool	Index	Describe
Oil resistant pen performance	Apply with Morning Light MG-2110 Oil Pen, wait for the handwriting to completely dry, then spray and wipe with 95% alcohol	Morning Light MG-2110 Oil Pen	No obvious traces	/
Performance of anti carburetor cleaning agent	Spray the carburetor cleaning agent on the repair layer film surface for 1 minute and wipe it with a dry cloth	Billed as carburetor cleaner	Swelling allowed, no fogging allowed	Swelling is restored, but fogging has already damaged the TPU substrate
Hot cracking performance	Stretch 1.4 times and stick it onto the steel plate, then place it in a 70 ℃ oven for 30 minutes	Bake oven	No cracking	Verify whether the parts with large extension under sunlight exposure will crack
Acid and alkali resistance	Soak in hydrochloric acid solution (pH 2-5) and sodium hydroxide solution (pH 10-13) for 24 hours	Hydrochloric acid, sodium hydroxide	No abnormalities	Simulating the impact of acidic and alkaline environments on products

2 Product Performance

ProjectZ	Test method	Tool	Index	Describe
Ultraviolet rejected	GB/T 2680	LS162	≥90%	/
Water droplet angle	GB/T 30693-2014	Water droplet angle tester	80±10°	Values less than 90 indicate hydrophilicity, while values greater than 90 indicate hydrophobicity
Aging resistance	QUV (0.5W, 40 ℃, 340nm, 120 minute cycle, spray for 18 minutes), 3200 hours	UV resistant climate test chamber	△E≤2 No cracking, no foaming	Rapid aging test
Temperature and cold resistance	High temperature 80 ℃, low temperature minus 40 ℃ Test for alternating hot and cold for 4 hours each	High and low temperature tester	No cracking, no foaming, no delamination	Simulate extreme weather conditions

2 Product Performance

The design concept of this product is as follows:

1、Using 175μm TPU substrate, the super strong protective ability far exceeds the industry average in terms of scratch resistance.

2、Adopting a dual anti dense coating with a coating thickness of 7μm, the product's hand feel is further improved, while endowing it with super strong corrosion resistance (it can still resist carburetor cleaning agents at 75 ℃).

3 Product usage precautions

1. Curly hair with hoarseness

Exception description: Tear off the protective film and roll it into small rolls along the repair layer. After leaving it for a period of time, matte marks may appear (the colder the weather, the more likely they are to appear).

Cause analysis: This product uses Kaiyang based film SMM301 coated with a high hardness, high density anti fouling coating. The hardness and density of the repair coating are much higher than those of the TPU substrate. At the same temperature, the molecular activity of SMM301 is higher than that of the repair coating. The lower the temperature, the greater the difference in activity. When the product is compressed or folded along the repair coating and external force is released, both the repair coating and SMM301 substrate undergo rebound repair. However, due to the large difference in molecular activity, the rebound repair amplitude of the two cannot be synchronized, resulting in the repair coating becoming dull.

Handling method: Try not to roll it into small rolls as much as possible. If it is necessary to roll it into small rolls, roll it along the matte release film surface; When the ambient temperature or paint cover temperature is higher than 30 ℃, it will recover on its own after being left for 1-2 hours. If the ambient temperature or paint cover temperature is lower than 30 ℃, it can be restored by pouring hot water at 70 ℃ or above.

3 Product usage precautions

2. Small Pit Point

Exception description: After installing the paint protection film, many small pits were found.

Cause analysis: This situation may occur by tearing off the protective film and placing it along the repair coating towards the small harvest roll for a period of time. If the environment is not good and there is a lot of dust, it is easy to be squeezed by the dust, resulting in small pits.

Handling method: If conditions permit, cut the sample film and place it flat without tearing off the protective film; When curling is required, maintain environmental cleanliness, spray water to remove static electricity when tearing off the film, remove the protective film, curl it towards the matte release film (white layer) direction, and leave it for no more than two hours; It is not recommended to remove the protective film from the leftover materials of small products, and they should be promptly rolled up and adhered; Remove the protective film before pasting and observe the appearance for any abnormalities before getting on the car.

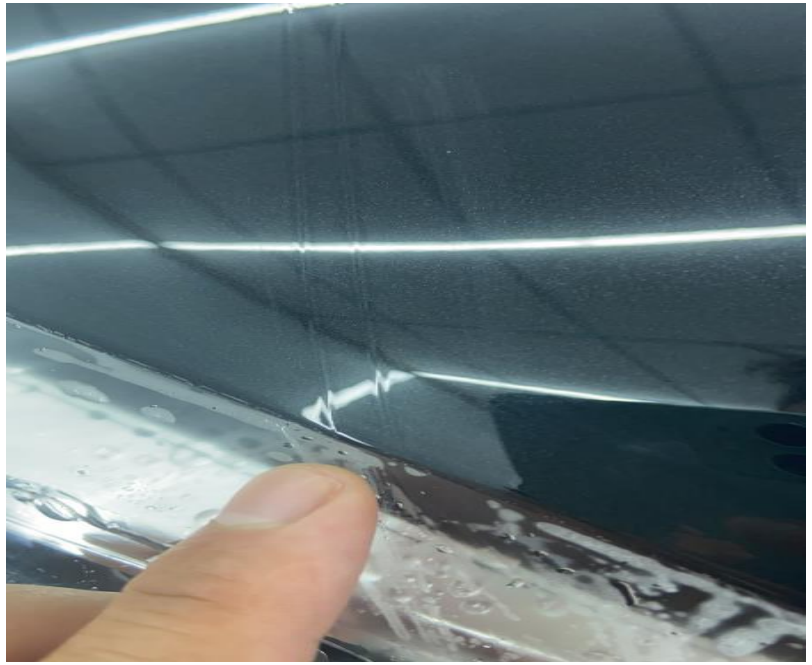
3 Product usage precautions

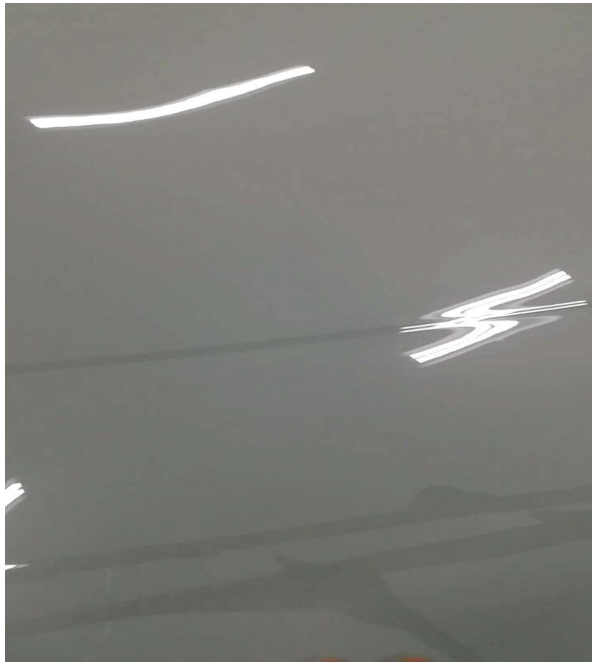
3. Membrane imprint

Exception description: Non bottom products were found to have horizontal marks after being attached to the car.

Cause analysis: This phenomenon is caused by the delamination of the protective film and the use layer, which leads to air entering.

Handling method: After cutting the sample sheet, the small support membrane should be promptly wound tightly and adhered to the remaining material; The flat film should avoid curling along the protective film without tearing it off; Remove the protective film before pasting and observe the appearance for any abnormalities before getting on the car.





3 Product usage precautions

4. Low temperature tear film residue adhesive

Exception description: Tearing off the paint protection film when the ambient temperature or body temperature is below 10 ℃ may result in serious adhesive residue.

Cause analysis: The installation adhesive for TPU paint protection film uses acrylic pressure-sensitive adhesive, which is easy to wet the surface of high surface energy substrates and difficult to wet the surface of low surface energy substrates. Generally, the surface energy of highly polar polymers is higher than that of non-polar polymers. Under low temperature conditions, the surface polarity of TPU base film will decrease, leading to a decrease in the wettability of acrylic pressure-sensitive adhesive, resulting in residual adhesive when the film is peeled off.

Handling method: Try to avoid tearing off the film at low temperatures as much as possible; If it is necessary to tear off the film, it is recommended to pour hot water on the surface of the film before tearing to increase the temperature of the paint protection film, and then immediately proceed with tearing off the film.

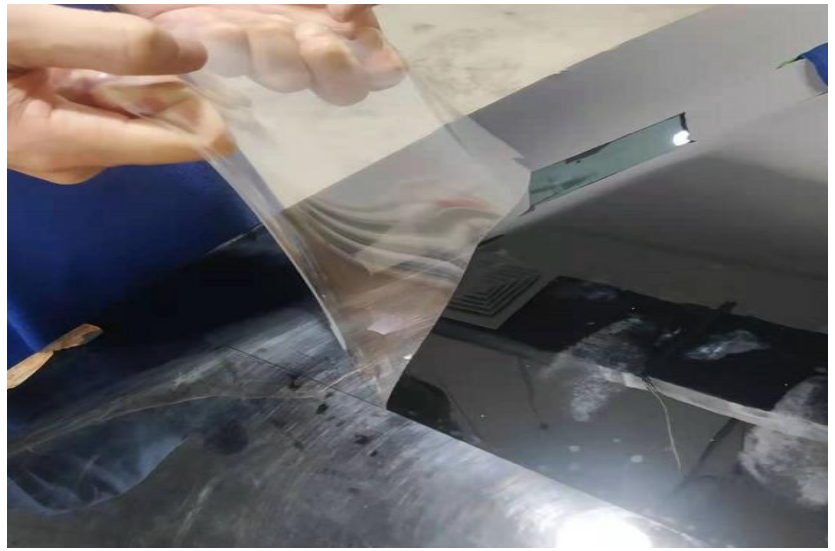
3 Product usage precautions

5. High temperature tear film residue adhesive

Exception description: Long term exposure to sunlight or prolonged driving of the car can cause the body (especially the front hood) to overheat for a long time, resulting in residual adhesive when peeling off the film.

Cause analysis: The higher the temperature of the paint surface, the better the wettability of the pressure-sensitive adhesive, and the stronger the adhesion with the paint surface. However, prolonged high temperature can lead to a decrease in the cohesion of the pressure-sensitive adhesive, and tearing off the film can easily result in residual adhesive.

Handling method: Wait for the body temperature to drop below 40 ℃ before tearing off the film. If there is still residual adhesive, **use a small angle to tear off the film. The larger the angle, the greater the cohesion of the adhesive**.



3 Product usage precautions

6. Shortly after applying the film, yellowing occurred

Exception description: Shortly after the car was installed, the paint protection film appeared slightly yellowish.

Cause analysis: The paint protection film will leave a small amount of solvent residue. If driving at night after installing the paint protection film causes the body temperature to rise, the residual solvent will undergo a reversible complexation reaction with certain substances and appear yellow.

Handling method: This reaction is UV reversible, and it will return colorless after being exposed to sunlight for more than half an hour. Moreover, the solvent will completely evaporate after exposure to sunlight, and yellowing will no longer occur.

3 Product usage precautions

7. Spot phenomenon appeared shortly after applying the film

Exception description: The protective film on the car's paint surface soon developed spots.

Cause analysis: Double anti paint protection film, especially for oil resistant pens, has a relatively dense repair coating. If the water dries on its own after being exposed to water, it will react with the residual unreacted substances (residual double bonds) in the repair coating for sufficient time to produce a white substance (not rain damage the coating and form rain spots). Due to the high density of the coating, it is not easy to come out.

Handling method: In the early stages of use, try not to let the water droplets evaporate and dry themselves as much as possible after being soaked in water. These residual unreacted substances will disappear in sunlight for about 1-2 weeks, and there is no need to worry about the water droplets evaporating and drying themselves in the future; If spots have already appeared, these white substances will slowly migrate out under sunlight and disappear after about a week of normal use. This phenomenon will not occur again in the future.

3 Product usage precautions

8. Brightness decreases after long-term use

Exception description: After prolonged use, the brightness of the film may not be as good as when it was just applied.

Cause analysis: The repair coating is essentially a mesh polyurethane material. On the one hand, it will expand and soften under direct sunlight (invisible to the naked eye), making it easy for dust to embed and difficult to remove after prolonged adhesion; On the other hand, sewage and sludge contain lipophilic bacteria, which can damage the ester bonds of polyurethane if not removed for a long time, leading to a decrease in brightness.

Handling method: Maintain good car washing habits and ensure two or more car washes per month. Cities with severe industrial pollution should pay more attention to car washing and maintenance.

THANKS