

Light Smoked Black Headlight Film Product Sheet

1.Product composition structure

Protective Film
Hard Coating
TPU Base Film
Acrylic Pressure Sensitive Adhesive
PET Liner

2. Technical Standards

2.1.Appearance performance

Product Name	Light Smoked Black Headlight Film	
Use	Car headlight protection	
Model	/	Standard
Point defects	0mm < Diameter ≤ 0.6mm	Uncountable
	0.6mm < Diameter < 3.0mm	Allowed number: ≤ 20.0×S
	Diameter ≥ 3.0mm	Allowed number: ≤ 1.0×S
Linear defects	0.2 mm < Width ≤ 0.5 mm, and the length is ≤ 80 mm	Number of entries allowed: ≤ 5.0×S, and the line spacing ≥ 100 mm
	Width > 0.5 mm or length > 80 mm	Not allowed
Scratching	Length ≤ 80 mm, and 0.2 mm < Width ≤ 0.5 mm	Number of entries allowed: ≤ 5.0×S, and the scratch spacing ≥ 100 mm
	Length > 80 mm, and 0.2 mm < Width ≤ 0.5 mm	Number of entries allowed: ≤ 1.0×S
	Width > 0.5 mm	Not allowed
Arch&Uneven membrane surface	177° ≤ Bending radius ≤ 183°	Allowed
	Bending arc < 177° Or bending radius > 183°	Not allowed
Protective film with air bubbles	Visible	Allowed number: ≤ 2.0×S
Foreign body	Visible	Not allowed
Cracking	Visible	Not allowed

Test method description:

1. S is the film area in square meters, with two decimal places reserved
2. Coating dumb strips, after removing the HC protective film, naturally visually inspect the sample surface; 3. All appearance abnormalities are measured in the area with the most concentrated sampling abnormalities;
4. Point defects include crystal points, concave and convex points, shrinkage holes, fisheye points, etc.;
5. Linear defects include adhesive surface lines, bubble lines, stop marks, indentations, rib patterns, horizontal lines, etc.;
6. Foreign objects include mosquitoes, dry glue, dirty spots, etc.

2.2. Specification

Product Name	Light Smoked Black Headlight Film	
model	/	
Thickness (finished product)	315±15 (μm)	
Thickness (protective film)	50 (μm)	
thickness(TPU&HC&glue)	190±10 (μm)	
thickness(PETRelease film)	75 (μm)	

2.3.1 Physical performance indicators

Product Name	Light Smoked Black Headlight Film	
Model	/	Test Method
Light transmittance	45±3 (%)	LS182(FULL)
Glossiness (60°)	≥90 (%)	GB 8807
Coating elongation at break	90~115 (%)	GB/T 1040.1
Elongation at break of finished product	≥250 (%)	GB/T 1040.1
Finished product tensile strength at break	≥15 (N/25mm)	GB/T 1040.1
Finished product release force	≤0.35 (N/25mm)	GB/T 2792
Initial adhesion	≥6 (N/25mm)	FTM 9
24h,180°Peel force	≥12 (N/25mm)	GB/T 2792

Note: The above data are laboratory test data

Test method description:The elongation at break of the coating is in accordance with the provisions of GB/T 1040.1 Determination of tensile properties of plastics Part 1 General Principles. During the tensile test, the elongation at break of the finished product is recorded when the HC coating breaks during tensile testing.

2.3.2 Characteristics

Product Name	Light Smoked Black Headlight Film	
Model	/	Test Method
Scratch repair ability	Instant Self-repair	(0.1mm) Copper brush&Drying gun
Water contact angle	$\leq 95(^{\circ})$	refer to DL/T864appendixA
Acid and alkali resistance	No visually visible coating disadvantages	Experimental method
Yellowing ΔE	≤ 2	GB/T 16422.1-2006
Stain Resistant	No visible water spots	GB/T 16422.2
Heat and humidity aging resistance	No visible bubbles, cracks, or discoloration	Constant temperature and humidity,168h
Puncture resistance	≥ 130 (N)	QC/T 1171-2022

Test method description:

1. Scratch repair ability: use a copper brush with a copper wire size of less than 0.1mm, brush the coating surface in a circular manner for 10 times, then heat it with a baking gun or 100°C boiling water, and visually inspect the disappearance of fine scratches;
2. Acid and alkali resistance: 10% hydrochloric acid and 0.1mol/L sodium hydroxide solution are applied to the surface of the sample and left naturally for 24 hours, and the appearance of the sample is evaluated for visually visible bubbles, cracks and other coating defects;
3. Anti-stain: use equipment with UV radiation, heating and spraying functions to destroy the sample. The parameter setting refers to the corresponding provisions of GB/T 16422.2, and the spray water uses general industrial water.
4. Resistance to wet and hot aging: keep the temperature constant at $80^{\circ}\text{C}\pm 2^{\circ}\text{C}$ and the relative humidity constant at $85\%\pm 2\%$ during the test, and compare the gloss and 180° peel strength of the sample before wet and hot aging.

3.Packaging

3.1Packaging material characteristics

Product Name	Light Smoked Black Headlight Film		
Model	3inch Plastic inner core tube/Double-sided tape/Red tape		
	PE plastic bag/Warranty Card/Packaging Carton(White cover&Black cover)		
	Wooden Pallets/Packing bag/Stretch Film/Product Information Sheet		

3.2Packing Specifications

Product Name	Light Smoked Black Headlight Film	
Model	/	
Volume length	15(m)	
Width	1.515~1.525 (m)	
Packaging	Carton & Pallet	

Note: Packaging methods and corresponding materials are only common specifications. Special or new methods are subject to actual delivery.

4.Storage Conditions

Product Name	Light Smoked Black Headlight Film	
Model	/	
Temperature	15~25(°C)	
Humidity	40~60 (%)	

Note:

1. All headlight film products must be stored in the original packaging and protected by raw material materials; 2. It is recommended to use sealed storage and vertical placement as the best storage solution to avoid direct sunlight and direct contact with heat sources;
3. The silicone protective film layer must be removed from the remaining parts after the packaging is removed to prevent adverse changes such as arching and fogging on the surface during storage;
4. Strict implementation of storage temperature and humidity control requirements is a necessary guarantee for maintaining product performance and can effectively prevent the external environment from damaging product performance.

5.Production and Construction Specifications

Product Name	Light Smoked Black Headlight Film
model	/
Temperature	15~25(°C)
Humidity	40~80 (%)
Cleanliness	Clean, no visible dust and suspended particles

Note:

1. All headlight film products should be cut and engraved in the appropriate environment during use to avoid the adverse environmental conditions of temperature and static electricity affecting the product appearance and performance;
2. The car paint surface must be cleaned and pre-treated before construction to avoid residual particles and oil stains on the paint surface causing abnormal quality;
3. Avoid car washing within one week of construction to avoid continuous soaking by rain to ensure that the adhesive and the paint surface are fully moistened to achieve the best adhesion effect.

Product Name	Light Smoked Black Headlight Film
model	/
Outdoor weathering period	Three years
Warranty coverage	Base material cracking, coating peeling, adhesive layer bubbling

Note:

1. The weather resistance of all lamp film products must meet the specified storage conditions and standardized construction procedures;
2. All items within the warranty scope of lamp film products must strictly comply with product use and maintenance specifications. For detailed instructions, please refer to the identification card and corresponding official statement provided with the product packaging.