

PETG Matte Skin Decorative Film Inspection Standard

NO.	Inspection Item		Test Method/Basis	Judgment Standard	Inspection Equipment
1	Product size		Width	Slitting width $\pm 2.0\text{mm}$, coil width $\pm 2.0\text{mm}$.	Tape measure
			Thickness (Measure the position of 12 points evenly in the width direction)	$0.10 < d \leq 0.20 \pm 0.01$	Micrometer
				$0.20 < d \leq 0.40 \pm 0.02$	
				$0.40 < d \leq 0.80 \pm 0.03$	
2	Surface flatness		Check with eyes at 20° to 90° to the board surface under sufficient light	After surface treatment, place the product on a flat surface for inspection. Obvious unevenness, undulation, or bending (approaching the flatness of the original board) is not allowed.	Visual estimation
3	Effective area of surface treatment		Visual inspection	Product front, 3-5mm at both ends without oiling.	Tape measure
4	Surface treatment effect		Q/WSC-PK-JY-047 Visual inspection, observe from different angles	The surface should be smooth, with uniform color, and free from missing coating, dirt, stains, impurities, oil residue, and UV agent on the reverse side. Use a strong flashlight to illuminate from different angles, and there should be no dense concave-convex points or wrinkles/lines of the transfer film.	Visual estimation
5	Protective film		Visual inspection	No residual glue stains, scratches, damage, wrinkles, blistering, peeling, oil residue debris pollution, or other defects are allowed. The edges should be trimmed evenly.	Visual estimation
6	Concave-convex points/mottling/crystal points/impurity points		Visual inspection	Points with $\Phi \geq 1.0\text{mm}$ are not allowed.	A visual inspection was performed against the film master dot chart. The assessment was based on a 500mm x 500mm area at a viewing distance of 50 cm.
				$1.0\text{mm} > \Phi \geq 0.5\text{mm}$: 1 allowed,	
				$0.5\text{mm} > \Phi \geq 0.3\text{mm}$: 2 allowed, point distance $\geq 150\text{mm}$, $0.3\text{mm} > \Phi \geq 0.15\text{mm}$: 3 allowed, point distance $\geq 100\text{mm}$,	
				Non-dense defective points with $\Phi \leq 0.15\text{mm}$.	
7	Scratch		Visual inspection	One scratch with a length $\leq 30\text{mm}$ and a line width $\leq 0.05\text{mm}$ is allowed, which should be invisible when viewed from the front, and visible but without a tactile feel when viewed from an angle.	A visual inspection was performed against the film master dot chart. The assessment was based on a 500mm x 500mm area at a viewing distance of 50 cm.
8	Cut-off Value		Visual inspection	Requires smooth and straight, no chipping, dog-tooth edges, cracks, film peeling, and other defects.	Visual estimation
9	Rupture		Visual inspection	Not allowed.	Visual estimation
10	Color	Monochrome	GB/T 17657-2022 in 4.34	Visually consistent, with no significant difference, compared to the surface treatment standard sample $\Delta E \leq 0.5$	
		Flash Silver		Visually consistent, with no significant difference, compared to the surface treatment standard sample $\Delta E \leq 1.5$	Visual inspection, color difference meter
11	Coating hardness		GB/T 17657-2022 in 4.58	Hardness $\geq H$	Electric pencil hardness tester / weight
				500g weight, Mitsubishi pencil 45° scratch, Note: The upper end is sampled and tested at the 100mm position, and one sample is taken from the left, middle, and right for testing. Each sample is tested 5 times, and it is qualified if no less than 4 times have no scratches/scratches.	

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12	Coating thickness		GB/T 13452.2-2008 ISO 2808:2007	≤10um.	Coating thickness gauge
13	Wear resistance		ASTM F2496 ISO 1518-1 ISO 1518-2 GME 60248 D42 1775	≥50r, apply 750g/cm ² pressure to the coating surface, and slight dotted scratches or no scratches on the friction position after 50 cycles.	Reciprocating abrasion testing machine /#0000 steel wool
14	Glossiness		GB/T9754-2007	Place the sample flat on the test bench, adjust the gloss meter angle to 60° for testing, and the test results are: 20° angle ≤1.5, 60° angle ≤6.0, 85° angle ≤40.0.	Gloss Meter
15	Scratch resistance	Ordinary	/	/	/
		Scratch resistance Customized	4.42 in GB/T17657-2022	1.2N (60g), ① More than 90% of the specimen surface has no continuous scratches, ② Coating thickness ≤10um, ③ Front and back sides, horizontal and vertical winding directions on a 3-inch core, no cracking is OK.	Scratch resistance tester
16	Surface stain resistance		4.43 in GB/T17657-2022	① After 16 hours, there is no obvious discoloration after the stain resistance test. ② After 30 minutes, there is no obvious discoloration after the acetone test. ③ Red ink can be wiped off with clean water. ④ 6824 oily pen can be wiped off with 75% alcohol. ⑤ 6824 oily pen nano sponge magic wipe can be wiped clean with dry wiping.	Huang Yu liquid shoe polish, Nestlé coffee 80℃ water, soy sauce, acetone, cola, aged vinegar, red ink, 6824 oily pen, 75% alcohol, nano sponge magic eraser
17	Contact Angle		GB/T 30693-2014	Test water with 3 microliter water droplets, contact angle ≥ 88	Water contact angle tester
18	Adhesion	Conventional	4.57 in GB/T17657-2022	≥4B, 3 times for each of the left, middle, and right hundred-grid tests.	3M#600/681 (alternative 610) test tape/cross cutter
		Boiling in water		/	
19	Yellowing resistance (168hUVA340)		GB/T23983-2009 4.32 in GB/T17657-2022	△E≤3 (Surface oil: △E≤0.7).	UV yellowing resistance test chamber
20	Lightfastness		4.31 in GT/T17657-2022	≥ Level 3.	Xenon arc lamp test chamber, 8-level blue wool standard sample, gray sample card
21	Rewinding		Packaging operation specification	1250mm × 3-inch compression-resistant foam tube or polished tube, smooth surface, no unevenness, neat winding, no running edges, 250 meters/roll, protective film facing outward.	Visual estimation
22	Product packaging		Packaging operation specification	The tape is dark blue. After processing, first wrap it with stretch film, and then wrap the product horizontally with tape for 3-5 turns to prevent the product from being misaligned on the side. The outer packaging is wrapped with pearl cotton packaging paper printed with the LOGO. Both ends of the product are sealed and packaged with paper corner protectors and hardened corner protectors. The packaging should be complete and undamaged.	Visual estimation

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23	Product identification samples	Visual inspection	① On the outer packaging paper, aligned with the top center position directly above the logo and below the corner protectors, affix one large label (58mm*218mm, 3 labels in total) with identical information, centered on the back of an A4 sample (210mm*297mm). The labeling should be standardized, comprehensive, clear, and accurate.	Visual estimation
			② The label should include the following information: Product Name, Product Series, Protective Film Name, Product Article Number, Product Specifications, Product Quantity, Base Material Number, Surface Treatment Number, Production Date, and other information.	
			③ Label information, physical object, A4 sample, the three must be consistent.	