PETG Super Matte Decorative Film Inspection Standard

NO.	Inspection Item		Test Method/Basis	Judgment Standard	Inspection Equipment
1	Product size		Width	Slitting width ±2.0mm, coil width ±2.0mm.	Tape measure
			Thickness (Measure the position of 12 points evenly in the width direction)	0.10<d≤0.20 ±0.01	Micrometer
				0.20<d≤0.40 ±0.02	
				0.40<d≤0.80 ±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. No significant undulations or bending shall be permitted (approaching the original plate's flatness).	Visual estimation
3	Effective area of surface treatment		Visual inspection	Front side of the product, 5mm at both ends without oil.	Tape measure
4	Surface treatment effect	Bending	Q/WSC-PK-JY-042	Bend 180°, the surface treatment at the bending area shall not crack, expose the base material, or reflect bright light.	Visual estimation
		Feel	Visual inspection, observe from different angles	Grittiness: Obvious sandy feel on the surface	Hand Feel
				Smoothness: Fine surface texture, silky smooth feel.	
		Appearance		After surface treatment, cut a full-width, 2-meter-long product, lay it flat on the observation table, and observe the product surface with spotlights from different angles. The surface should be smooth and the color uniform, without any missed coating, exposed bottom, dirt, impurities, broken oil residue, or UV agent on the reverse side. Illuminate with a strong flashlight from different angles, and there should be no dense bumps or dark patterns.	Visual inspection
		Raised pattern		Uniform texture, consistent texture size.	High-power microscope
5	Protective film		Visual inspection	No residual glue stains, scratches, damage, wrinkles, blistering, air bubbles, oil residue debris contamination, 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 Φ ≥1.0mm 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.
				1.0mm>Φ≥0.5mm: 1 allowed,	
				0.5mm>Φ≥0.3mm: 2 allowed, point distance ≥150mm, 0.3mm>Φ≥0.15mm: 3 allowed, point distance ≥100mm,	
				Non-dense defective points with Φ≤0.15mm.	
7	Scratch		Visual inspection	Allow 1 length ≤30mm, line width ≤0.05mm, invisible when viewed directly, visible but not palpable when viewed obliquely.	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 point		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 discernible differences; Contrast between reference samples AB ≤ 0.5; Batch-to-batch colour difference E ≤ 0.3.	
		Flash Silver		Visually consistent with no discernible differences; Contrast between reference samples AB ≤ 1.5; Batch-to-batch colour difference E ≤ 0.8.	Visual inspection, color difference meter

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11	Coating hardness		GB/T 17657-2022 in 4.58	Hardness ≥H, 500g weight, Mitsubishi pencil 45° scratch, Note: The upper end is sampled at the 100mm position for testing, 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.	Electric pencil hardness tester / weight
12	Coating thickness		GB/T 13452.2-2008 ISO 2808:2007	≤10um.	Coating thickness gauge
13	Wear-resistant		ASTM F2496 ISO 1518-1 ISO 1518-2 GME 60248 D42 1775	≥10r Apply 750g/cm2 pressure to the coating surface, slight dot-like abrasion or no abrasion after 10 cycles of friction.	Reciprocating abrasion testing machine / #0000 steel wool
14	Scratch-resistant		GB/T 17657-2022 in 4.42	1.2N (60g), ① More than 90% of the specimen surface has no continuous scratches, ② Coating thickness ≤10um, ③ The front and back sides, transverse and longitudinal winding to a 3-inch core, no cracking is OK	Scratch resistance tester
15	Roughness	Grittiness	GB/T 1031-2009	Ra :1.3±0.1um (Check the data after the surface feels sandy)	Roughness tester
		Smoothness		Ra:0.9±0.1um (The surface texture is fine and the hand feel is silky)	
16	Glossiness	Grittiness	GB/T 9754-2007	White/Bright Color Series: 20 ° ≤1.5, 60 ° ≤4.5, 85 ° ≤10 Other colors: 20 ° ≤1.0, 60 ° ≤3.0, 85 ° ≤10	Gloss Meter
		Smoothness		White/Bright Color Series: 20 ° ≤1.5, 60 ° ≤4.5, 85 ° ≤12 Other colors: 20 ° ≤1.0, 60 ° ≤3.0, 85 ° ≤12	
17	Stain resistance	Grittiness	4.43 in GB/T 17657-2022	① After 10 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 can be wiped clean with a nano sponge magic eraser when dry. ⑥ Oil stains/sweat oil from the head/cooking oil can be wiped off with alcohol/detergent. ⑦ Ordinary hand sweat prints/sweat fingerprints can be wiped off dry or disappear naturally.	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
		Smoothness		① After 10 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.	

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		Smoothness		④ 6824 oily pen can be wiped off with 75% alcohol. ⑤ 6824 oily pen can be wiped clean with a nano sponge magic eraser when dry. ⑥ Oil stains/sweat oil from the head/cooking oil can be wiped off with alcohol/detergent.	
18	Contact Angle		GB/T 30693-2014	Test water with a 3 microliter drop, contact angle ≥70 °.	Water contact angle tester
19	Adhesion	Conventional	4.57 in GB/T 17657-2022	≥4B, 3 times for each of the left, middle, and right hundred-grid tests.	3M#600/681 (alternative 610) test tape/grid cutter, water bath
		Boiling in water		≥4B, 80℃/30 minutes, natural cooling ≥10 minutes, no cracking	
20	Yellowing resistance (168hUVA340)		GB/T 23983-2009 GB/T 17657-2022 in 4.32	△E≤3 (Surface oil: △E≤0.7)	UV yellowing resistance test chamber
21	Lightfastness		4.31 in GT/T 17657-2022	≥ Level 3	Xenon arc lamp test chamber, 8-level blue wool standard sample, gray sample card
22	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.	
23	Product packaging		Packaging operation specification	The tape is dark brown tape. After processing, first wrap it with stretch film, and then wrap the product horizontally with tape for 3-5 turns to prevent the side of the product from being misaligned. The outer packaging is packaged with pearl foam packaging paper printed with LOGO. Both ends of the product are sealed and packaged with paper guard plates and hardened corner protectors. The packaging should be complete and undamaged.	Visual estimation
24	Product Identification Sample		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.	
				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.	
				Labeling should be standardized, comprehensive, clear, correct, and consistent with the order content.	Visual estimation