

# TECHNICAL INFORMATION

## Fortina Performance Data > Exterior Film

### Decorative Sheet Performance Data (Exterior Specification)

Evaluation Items		Test items	Test method	
1	Dimensional stability	Heat resistance test	Put a cross-cut measuring 100 mm x 100 mm at the center of a specimen, leave it at a temperature of 65°C for two days, and check the clearance at the cross-cut part.	
2	Weather resistance	Accelerated weathering test	Apply a light beam to the specimen with a sunshine carbon arc weather meter for 8,000 hours and check the appearance.	
3	Heat resistance	Long-term heat resistance test	Leave the specimen in each oven for 1,000 hours and check the appearance.	60°C
				80°C
4	Heat cycle resistance	Heat-cold repeating test	Conduct 100 cycles, with each cycle consisting of 80°C for two hours switched to -20°C for two hours, and observe the appearance.	
5	Dry/wet cycle resistance	Dry/wet cycle test	Conduct 20 cycles, with each cycle consisting of 40°C and 30% RH for 8 hours switched to 40°C and 90%RH for 16 hours, and observe the appearance.	
6	Humidity resistance	Long-term humidity resistance test	Leave the specimen in a high humidity tank at a constant temperature of 40°C and 90%RH and observe the appearance.	
7	Scratch resistance	Pencil scratch resistance (based on JIS H8602)	Apply the core of the pencil to the specimen while applying a load of 1 kg to the angle of about 45° and scratch the surface toward the front at a constant speed.	
8	Abrasion resistance	Abrasion resistance test	Rotate the specimen 7,000 times with a taper abrasion tester (abrasion wheel: CS-17; and load: 1 kg) and observe the appearance.	
		Falling sand abrasion resistance test (based on JIS H8602)	Let a grinding material fall through a guiding tube of 20 mm in inner diameter to the specimen at an angle of 45° at a falling rate of 320 g/min. and measure the time when the base material begins to be exposed and the abrasion depth.	
9	Low temperature impact resistance	Dupont impact test	Let a 1 kg weight fall from a height of 30 cm to the specimen at 5°C and observe the appearance.	
10	Pollution resistance	Pollution resistance test (1)	Immerse dry cotton in a solvent, rub the surface of the specimen with the cotton for 20 strokes and observe the appearance.	Petroleum benzine Methyl ethyl ketone Ethyl acetate Ethanol
		Pollution resistance test (2)	Apply each pollutant, wipe it off with water or ethanol after a lapse of 24 hours and observe the appearance.	Blue ink Black shoe cream Black marker Red crayon
		Oil and solvent resistance test	Apply each oil and solvent, wipe it off with water after a lapse of 24 hours and observe the appearance.	Heating oil CRC556 Ethanol Petroleum benzine
11	Acid resistance	Acid resistance test	Immerse the specimen in a 1% sulfuric acid aqueous solution for one hour and observe the appearance.	
12	Alkali resistance	Alkali resistance test (based on JIS H8602)	Put a drop of 5 g/l sodium hydrate aqueous solution to the surface, leave it for 24 hours, wash the solution off with water, and observe the appearance.	
13	Corrosion resistance	CASS corrosion resistance test (based on JIS H8602)	Put the specimen in a test tank, spray a sodium chloride solution of a 50 g/l concentration to the specimen for 48 hours, and observe the appearance.	
14	Adhesiveness	Cross-cut peel test (based on JIS H8602)	Scratch the surface at an interval of 2 mm in both the longitudinal and transverse directions to the depth that reaches the base material, make 100 grids with those scratches, apply cellophane tape over the grids, and peel it off.	
15	Adhesive strength	Normal state adhesiveness test	Pull the sheet in a 180 degree direction at a rate of 200 mm/min. relative to the base material under a normal room temperature and measure the adhesive strength.	
		Heat creep resistance test	Apply a load at a rate of 500 g/25 mm to the sheet at a 90 degree direction relative to the base material at 60°C and measure the peeling distance 30 min. later.	
		Cold creep resistance test	Apply a load at a rate of 500 g/25 mm to the sheet at a 90 degree direction relative to the base material at -20°C and measure the peeling distance 30 min. later.	

\* These data are based on our own test results. We do not guarantee those results.

## TECHNICAL INFORMATION

# Fortina Performance Data > Interior Film

### Decorative Sheet Adhesion Performance Data (Interior Specification)

Evaluation Items	Test items	Test method
1	Weather resistance Accelerated weathering test	Apply light beam for a certain duration of time with a sunshine carbon arc weather meter.
2	Heat resistance Heat resistance test (company standard)	Leave the specimen in an oven at a temperature of $60 \pm 5^{\circ}\text{C}$ for 48 hours.
3	Water resistance Water resistance test (company standard)	Immerse the specimen in room temperature water for 24 hours and then dry it.
4	Humidity resistance Humidity resistance test (company standard)	Leave the specimen in a tank at a constant temperature and humidity of $40 \pm 2^{\circ}\text{C}$ and $90 \pm \% \text{RH}$ for 48 hours.
5	Heat cycle resistance Heat-cold repeating test (based on JAS heat-cold repeating C test)	Put a specimen measuring 150 x 150 mm in an oven at a temperature of $60 \pm 3^{\circ}\text{C}$ , leave it there for two hours, and leave it in a low-temperature tank at $-20 \pm 3^{\circ}\text{C}$ for two hours. Repeat this for two cycles.
6	Chemical resistance (company standard)	Apply (a) 2% sodium hydrate, (b) 5% acetate solution, and (c) petroleum benzine to the specimen, leave it for six hours and wipe them off.
	Chlorine resistance test (company standard)	Apply chlorine of 1.0 mg/L, which is the sanitation criterion for a swimming pool, and chlorine of 10.0 mg/L, 10 times higher concentration of the above, to the specimen, leave it for 24 hours, 48 hours, and 72 hours, and wipe it off. However, change chlorine water every six hours considering the decomposition rate of chlorine.  * Sanitation criterion of a swimming pool: The residual free chlorine concentration of water in a swimming pool shall be 0.4 mg/L or more. The desired concentration is 1.0 mg/L (according to the notification of the Director-General, Environmental Health Bureau, Ministry of Health and Welfare).
7	Pollution resistance test (1)	Apply each detergent (weak alkali, neutral, and weak acid), insecticide, and heating oil to each specimen, leave them for six hours, and wipe them off.
	Pollution resistance test (2)	Draw a 10 mm wide line with a permanent marker and a crayon, leave it for two hours, and wipe it off with a solvent or a detergent.
8	Abrasion resistance Abrasion resistance test (pattern loss) (based on JAS abrasion C test)	Conduct a test on a 120 x 120 mm specimen with a taber abrasion tester and calculate the rotational value when the loss of pattern reaches 50%.
9	Scratch resistance Scratch resistance test (company standard)	Pencil hardness test based on JIS K 5400 (load of 500 g)

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