

Photodon LLC	Michigan	USA	Ph: 847-377-1185		Email: sales@photodon.com	
Product Name:	HSC	Finished Material Type:	9H, oleophobic, anti-microbial, shock absorbing, clear finish		Date 8-23-24	
Film Roll Size: 1040mm (nominally)			Country of Origin: Korea - Customized and Processed in the USA			
		Tested Items	Thickness (µm)	Thickness (in)	Test Method	Notes
Material	Top Liner		60	0.0023	Micrometer	
	Anti-microbial Coating		-	-	-	
	9H Oleophobic Coating		-	-	-	
	PET Film		200	0.0078	Micrometer	
	Shock absorption silicone Elastomer		100	0.0039	Micrometer	
	Release Liner		50	0.0019	Micrometer	
	Total Thickness		410 ± 10	0.0161	Micrometer	
		Thickness without liners	300	0.0118	Micrometer	
		Tested Items	Unit	Spec	Result	Test Method
Optical Properties	Total Light Transmittance		%	-	92.3	ASTM D1003-77 / JIS K 7361* Spectrophotometer(Konika CM5)
	Haze		%	-	0.9	ASTM D1003-77 / JIS K 7136*
	Gloss Level @ 60°		Gloss Units	-	170.5	ASTM D2457-7*
	Rainbow Moire		-	-	Pass	Attached to glass, no liners
Thermal Properties	Curling		%	> 90	91.3	-
	Thermal Shrinkage %		%	MD/TD< 1.0	0.13/0.15	-
	Retentivity		mm/hr	-	< 3.0	KSA1107 500g/100°C
	Temp/Humidity		°C/RH%	-	No Problem	85°C / 85RH%
	Heat Cycle		-	-	No Problem	-40°C ↔ 80°C, 20 cycles
Mechanical Properties	Contact Angle		°	± 5	110	Contact Angle Meter
	Oleophobic Coating Durability		°	± 2	95	1500cycles/Rubbing test stick@ 45°, 500g load/cm²**Rubber stick hardness:81 (Durometer A type)
	Adhesion Stability		-	100/100	Pass	ASTM D3359 / JIS K 5600 Cross Cut Adhesion Test
	Pencil Hardness	Film only	H	≥ 9	9H @ 45°, 500g load	ASTM D3363 / JIS K5600-5-4
		w/ adhesive	H	≥ 7	7H @ 45°, 500g load	ASTM D3363 / JIS K5600-5-4
	Scratch Resistance		-	-	No Damage	ASTM D1044 Steel wool (#0000)* 20 Laps @ 450g load/cm²
	Peeling Strength		gf/inch	-	10 / 30 min	LLOYD LS1 180° peel, g/25mm, 300mm/min
Chemical Resistance	Resistant to:					
	Alcohols - Dilute acids - Dilute alkalis - Esters - Hydrocarbons - Ketones			No Problem		DIN 42 115

*After peeling off liners

Antimicrobial Activity (JIS Z 2801:2010E)							
Test microorganisms	Initial bacteria number (CFU/film)	Result(s)				Antimicrobial activity	
		Bacteria number after 24 hr at 35 ± 1°C		R	Percentage (%)*		
		Control (CFU/film)	Sample (CFU/film)				
Escherichia coli ATCC 8739	2.7 x 10 ⁶	8.3 x 10 ⁸	1st	9.1 x 10 ⁵	3.0	99.89%	
			2nd	1.7 x 10 ⁶	2.7	99.80%	
			3rd	2.3 x 10 ⁶	2.6	99.72%	
Staphylococcus aureus ATCC 6538	4.3 x 10 ⁵	1.2 x 10 ⁸	1st	2.2 x 10 ⁵	2.7	99.82%	
			2nd	8.9 x 10 ⁴	3.1	99.93%	
			3rd	1.3 x 10 ⁵	3.0	99.89%	