



Join Well Technology Co., Ltd.

No.61-2,Neighborhood 9, Dacuo Village, ChuNan Town, MiaoLi, Taiwan

TEL:886-37-484199 FAX:886-37-481607

Product Model				0400-B01 / 0250-P04		0400-B02 / 0250-P01		0400-B22		0450-P02		
Product function				Clear / AG		Double AG		Double AG		AG+AN		
Product structure				Clear Hard-coat PET AG Hard-coat ITO		AG Hard-coat PET AG Hard-coat ITO		AG Hard-coat PET AG Hard-coat ITO		AG Hard-coat PET AN Hard-coat ITO		
Expiry				Max. 6 Month		Max. 6 Month		Max. 6 Month		Max. 6 Month		
Property		Unit	Test Method	SPEC. Data		SPEC. Data		SPEC. Data		SPEC. Data		
Organic material characteristics	Organic material type	—	—	PET		PET		PET		PET		
	Organic material Thickness	μm	Micrometer	197±10	203±10	197±10		199±10		198±10		
	Hard-coat Hardness	H	ASTM D3363	≥ 3H		≥ 3H		≥ 3H		≥ 3H		
Optical characteristics	Total Transmission	%	ASTM D1003	≥ 86	Min.86	≥ 86	Min.85	Min.86		Min.85		
	b*			-		-		-		-		
	Haze	%	ASTM D1003	3~6		6~10	8±2	6~10		8±2		
ITO Film characteristics	Sheet resistance (Bake)	Ohm/sq	ASTM D991	400±50	180~340	400±50	180~340	400±50		450±80		
	Uniformity	%	ASTM D991	≤ 10	≤ 15	≤ 10	≤ 15	≤ 10		≤ 10		
	ITO Adhesion	%	ASTM D3359	100		100		100		100		
	Environmental character Heating shrinkage	(R/R0)	-	0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2				
	Chemical character Thermal stability	(R/R0)	5% NaOH 24hrs		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2			
			Ethanol 24hr at R.T.		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2			
			Acetone 24hr at R.T.		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2			
			Toluene 24hr at R.T.		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2			
	Dimensional stability Heating shrinkage	MD	%	ASTM D1204	≤ 1.0		≤ 1.0		≤ 1.0		≤ 1.0	
TD		%	ASTM D1204	≤ 0.7		≤ 0.7		≤ 0.7		≤ 0.7		



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Product Model				0400-B07 / 0250-B07		0400-S03		0400-Q01		0300-S01		
Product function				Clear / Clear		Clear / AB		Clear		Clear		
Product structure				Clear Hard-coat PET Clear Hard-coat ITO		Clear Hard-coat PET AB ITO		Clear Hard-coat PET ITO		Clear Hard-coat PET ITO		
Expiry				Max. 6 Month		Max. 6 Month		Max. 6 Month		Max. 6 Month		
Property		Unit	Test Method	SPEC. Data		SPEC. Data		SPEC. Data		SPEC. Data		
Organic material characteristic	Organic material type	—	—	PET		PET		PET		PET		
	Organic material Thickness	μm	Micrometer	197±10		198±10		194±10		194±10		
	Hard-coat Hardness	H	ASTM D3363	≥ 3H		≥ 2H		≥ 3H		≥ 3H		
Optical characteristics	Total Transmission	%	ASTM D1003	≥ 86		Min.86		≥ 86		≥ 86		
	b*			-		-		-		-		
	Haze	%	ASTM D1003	≤ 2.5	<2.5	≤ 2		≤ 2		≤ 2		
ITO Film characteristics	Sheet resistance (Bake)	Ohm/sq	ASTM D991	400±50	270±70	350~500		350~450		300±80		
	Uniformity	%	ASTM D991	≤ 10	≤ 15	≤ 10		≤ 10		≤ 10 (406mm)	≤ 15 (1200mm)	
	ITO Adhesion	%	ASTM D3359	100		100		100		100		
	Environmental character Heating shrinkage	(R/R0)	-	0.8 ≤ R/R0 ≤ 1.2		/			0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2	
	Chemical character Thermal stability	(R/R0)	5% NaOH 24hrs	0.8 ≤ R/R0 ≤ 1.2					0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2	
			Ethanol 24hr at R.T.	0.8 ≤ R/R0 ≤ 1.2					0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2	
			Acetone 24hr at R.T.	0.8 ≤ R/R0 ≤ 1.2					0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2	
			Toluene 24hr at R.T.	0.8 ≤ R/R0 ≤ 1.2					0.8 ≤ R/R0 ≤ 1.2		0.8 ≤ R/R0 ≤ 1.2	
	Dimensional stability Heating shrinkage	MD	%	ASTM D1204	≤ 1.0		≤ 1.0		≤ 1.0		≤ 1.0	
TD		%	ASTM D1204	≤ 0.7		≤ 0.7		≤ 0.7		≤ 0.7		



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Product Model			0150-V02 / 0250-V01				
Product function			Clear / Clear				
Product structure			Clear Hard-coat PET Clear Hard-coat ITO				
Expiry			Max. 6 Month				
Property		Unit	Test Method	SPEC. Data			
Organic material characteristic	Organic material type	—	—	PET			
	Organic material Thickness	μm	Micrometer	133±5			
	Hard-coat Hardness	H	ASTM D3363	≥ 3H			
Optical characteristics	Total Transmission	%	ASTM D1003	≥ 86			
	b*			≤ 1.5	≤ 2		
	Haze	%	ASTM D1003	≤ 2			
ITO Film characteristics	Sheet resistance (Bake)	Ohm/sq	ASTM D991	150±50	180~340		
	Uniformity	%	ASTM D991	≤ 10			
	ITO Adhesion	%	ASTM D3359	100			
	Environmental character Heating shrinkage	(R/R0)	-		0.7 ≤ R/R0 ≤ 1.2		
	Chemical character Thermal stability	(R/R0)	5% NaOH 24hrs		0.8 ≤ R/R0 ≤ 1.2		
			Ethanol 24hr at R.T.		0.8 ≤ R/R0 ≤ 1.2		
			Acetone 24hr at R.T.		0.8 ≤ R/R0 ≤ 1.2		
			Toluene 24hr at R.T.		0.8 ≤ R/R0 ≤ 1.2		
	Dimensional stability Heating shrinkage	MD	%	ASTM D1204	≤ 1.0		
		TD	%	ASTM D1204	≤ 0.7		