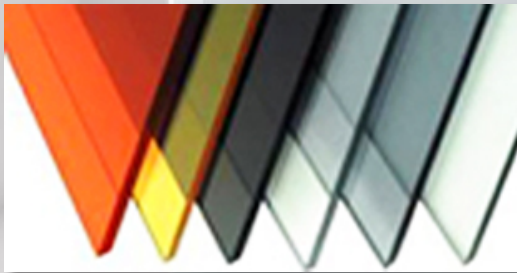


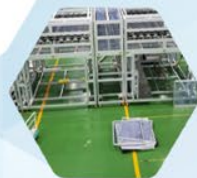
SEMI-PERMANENT ANTI-STATIC & PERMANENT STANDARD POLYCARBONATE



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Semi-permanent Anti-static & Permanent Standard Polycarbonate



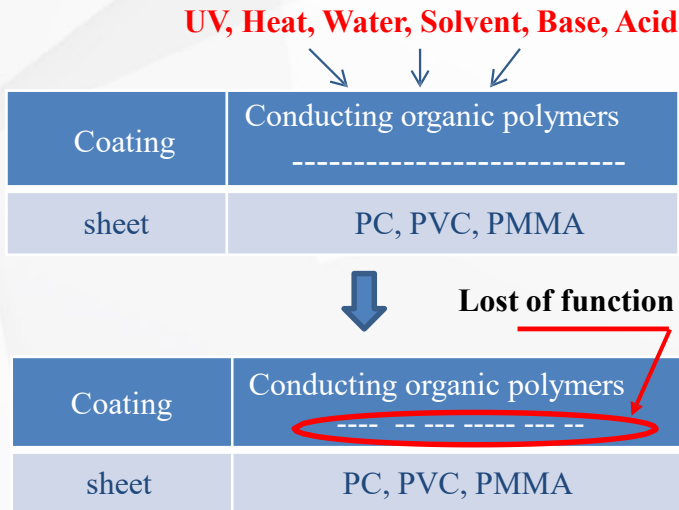
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Overview

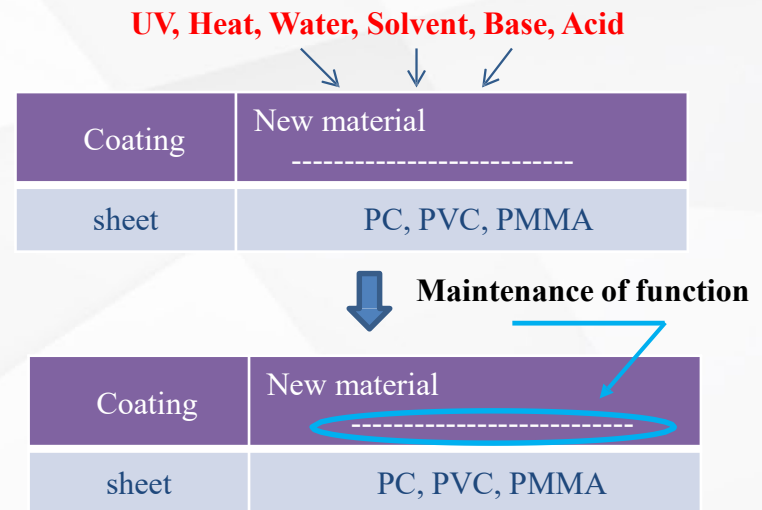
■ Competitor's Limit

- Antistatic sheets using conducting organic polymers have a problem that the stability (surface resistance increase) remarkably deteriorates by vulnerable to external stress due to the structural characteristics of the raw material itself.
- Decoron Co. Ltd. develop and disseminate the anti-static sheet which secured semi-permanent stability for the first time in the industry through long-term R & D investment and company-wide support.

■ Competitor's Product



■ New Decoron Product (Production)



Semi permanent anti-static sheet

Test report (Accredited external certification authority)

Physical & Optical test

	Spec	Competitor	Decoron's New type Product	Method
Surface resistivity	10^6 - 10^8	1×10^7	1.4×10^7	ASTM D257
Pencil hardness	HB ↑	HB	↑ F	ASTM D3363
Luminous transmittance	85% ↑	85.2	↑ 88.4	ASTM D1003
Haze	1% ↓	0.2	↓ 0.1	ASTM D1003

Chemical test

	Competitor		Decoron's New type Product		Method
	Surface resistivity	Result	Surface resistivity	Result	
Distilled water	3×10^7	NO Defects	1.1×10^7	NO Defects	ASTM D257
30% NaOH	2×10^7	NO Defects	9.7×10^6	NO Defects	
30% H ₂ SO ₄	8×10^7	NO Defects	7.8×10^6	NO Defects	KS M ISO 175:2010
Methanol	7×10^7	NO Defects	1.2×10^7	NO Defects	
Ethanol	2×10^7	NO Defects	5.9×10^7	NO Defects	
IPA	4×10^7	NO Defects	6.8×10^6	NO Defects	
Wiper	8×10^{10}	NO Defects	4.3×10^7	NO Defects	

* Wiper used in cleaning may affect surface resistance depending on materials and ingredients.

Semi permanent Anti-static sheet

Test report (Accredited external certification authority)

■ Light stability test (weatherproof: UV rays + solar rays accelerated photo-degradation test)

- Highly accelerated photo-degradation test : The test method of measuring the change of surface resistance by amplifying energy and exposing by this solar condition
(condition of outdoor exposure : UV rays + Visible rays + Infrared rays).
- Climate base data of Korea Meteorological agency : Annual average of solar radiation (4,756MJ/m²)
- Equivalent time: One hour on accelerator = 44.8 hours(about 2days) of actual outdoor exposure.

*** One year of actual outdoor exposure = 196 hours on accelerator**

Outdoor Exposure		1 Year	3 Years	5 Years
Exposure time of accelerated photo- degradation		196h	587h	979h
Competitor	Before Exposure	1.4 X 10 ⁷	Unmeasured	Unmeasured
	After Exposure	8.5 X 10¹²	Unmeasured	Unmeasured
New Decoron Product	Before Exposure	1.2 X 10 ⁷	2.6 X 10 ⁷	2.0 X 10 ⁷
	After Exposure	3.6 X 10 ⁷	4.7 X 10 ⁷	5.1 X 10 ⁷

* Evaluation results from final accredited external certification authority

- According to accelerated test, 196, 587 and 979h light irradiation light corresponds to 1, 3 and 5 years equivalent time, The surface resistivity of the sample does not show a large change even though the light irradiation time is increased.

Application fields

■ Semiconductor Manufacturing and Other Pertinent Equipment

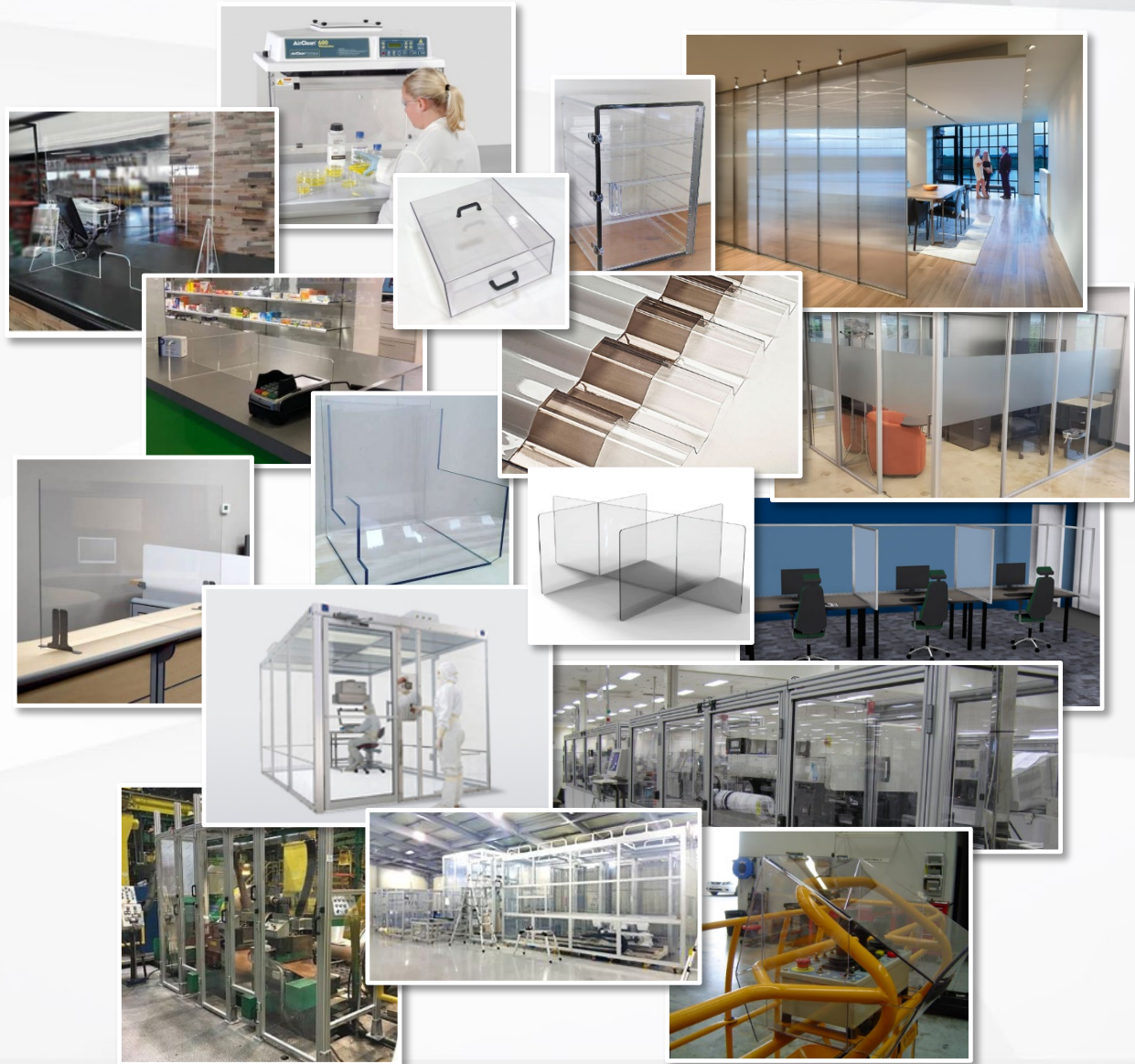
- Clean Benches
- Clean drafts
- Cleaners
- Wafer carrying boxes
- Desiccators
- Clean storage
- Cases
- Covers and partitions
- Clean ducts

■ Clean Rooms

- Clean funnels
- Windows
- Room partitions Covers
- Louvers Galleries

■ Others

- Meter covers
- Machine covers
- Displays
- Viewing Windows
- Various casings
- Part boxes



1. Antistatic sheet

Overview

■ Excellent antistatic function

Prevents originate of static electricity effective as the surface's surface resistance value is 10^6 to 10^8 ohm/square.

■ Excellent surface hardness (Scratch resistance)

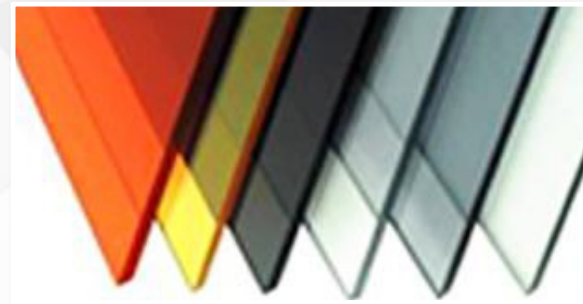
The surface is safe from scratches as it is hard coated

■ Excellent chemical resistance

The surface' durability and weather resistance against chemicals including solvent, etc. . are excellent as it is hard coated

■ Beautiful surface

The surface is glossy and transparent and has acrylic appearance as it is.



1. Antistatic sheet

Datasheet

The Specification of Anti-static Plate

Field	Items	ASTM / JIS	Unit	DCR-805-V0	DCR-805	DCR-705	DCR-605	DCR-605 FM4910
				polycarbonate	polycarbonate	PMMA	PVC	PVC
Basic	Specific gravity	D792 / ISO 1183-1		1.2	1.2	1.19	1.4	1.4
Optical	Total light transmittance	D1003 / JIS K7361-1	%	84	84	88	73	75
	Haze	D1003 / JIS K7136	%	0.9	0.9	0.4	3.6	3.0
Mechanical	Tensile strength at brake	D638 / JIS K7162-1B	Mpa	71	71	70	50	68
	Elongation at brake	D638	%	115	115	2.5	7	
	Fiexural strength	D790 / JIS K7171	Mpa	88	88	90	80	87
	Impact strength(charpy)	D256	kJ/m ³	13	13	1.6	2.3	
	Rockwell hardness	D785		76	76	100	76	

1. Antistatic sheet

Field	Items	ASTM /JIS	Unit	DCR-805-V0	DCR-805	DCR-705	DCR-605	DCR-605 FM4910
				polycarbonate	polycarbonate	PMMA	PVC	PVC
Thermal	Deflection temp (under loading)	D648 / JIS K7191	°C	127	127	95	65	63
	Thermal expansion coefficient	D696	/°C	5.2*10 ⁸	5.2*10 ⁸	6.0*10 ⁸	6.7*10 ⁸	
	Thermal cycle			no change	no change	no change	no change	
Electrical	Surface resistivity	D257 / JIS K6911	ohm/cm ²	10 ⁶ ~10 ⁸	10 ⁶ ~10 ⁸	10 ⁶ ~10 ⁸	10 ⁶ ~10 ⁸	10 ⁶ ~10 ⁸
	Volume resistivity	D257 / JIS K6911	ohm/cm ²	>10 ¹⁵	>10 ¹⁵	>10 ¹⁵	>10 ¹⁵	>10 ¹⁵
Chemical resistance (#1)	Acetone			0	0	0	0	0
	IPA			0	0	0	0	0
	Hydrochloric acid (36%)			0	0	0	0	0
	Nitric acid (60%)			0	0	0	0	0
	Sulfuric acid (97%)			0	0	0	0	X
Miscellaneous	Water absorption	D570	%	0.15	0.15	0.3	0.2	
	Pencil hardness	D3363		HB	HB	4H	HB	
	Steel wool test			Slightly scratched	Slightly scratched	no scratched	scratched	
	Combustibility	D635		Self-extinguishing	Self-extinguishing	Flammable	Self-extinguishing	Self-extinguishing
	UL standard	UL94 / FM4910		V-0	V-2	HB	V-0	FM



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