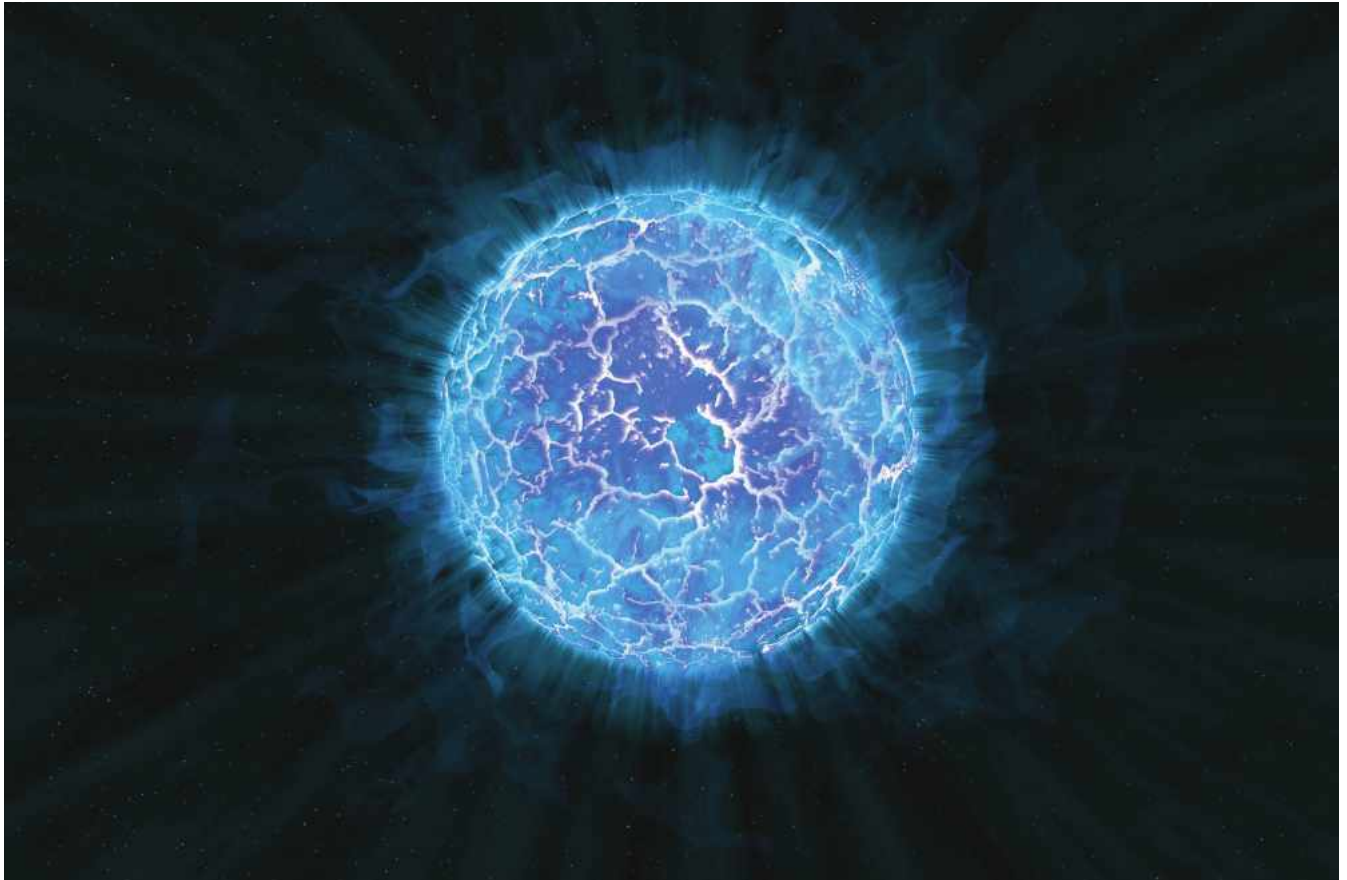


ONE STOP SERVICES

FOR CLEANROOM & ESD CONTROL

Vol. 8 (2020)





MEC Industries has grown into one of the leading companies in the field of two major business units which are ESD control and Cleanroom industries in Korea. With the rise of high-technology industry, MEC Industries has set the fundamental goal as providing quality products in all aspects of ESD control and Cleanroom area, ultimately eliminating the cause of defect from high-end products.

Over the last two decades, MEC Industries has been aimed to supply optimized ESD control and Cleanroom products to whole of Asia, Europe, Middle East and America. Now, MEC Industries is poised to take another giant leap forward to become a global leader with advanced technologies and cooperation with vast majority of reputed companies over the world.

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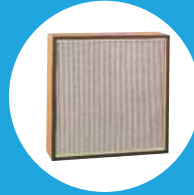
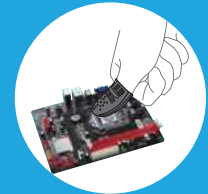
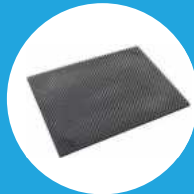
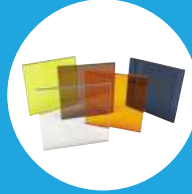
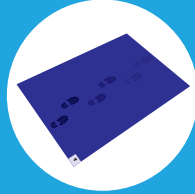
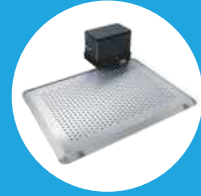


Disposable
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CLEANROOM & ESD CONTROL



SAFETY



MEDICAL & PHARMACEUTICAL

● ESD / Cleanroom Fabrics

Polstar ESD / Cleanroom Fabrics are primarily composed of high multi-filament polyester and carbon filament yarn to insure maximum protection against particle contamination and ElectroStatic Discharge (ESD).

The Polstar fabrics did not neglect to consider the salient concerns of the workers including air permeability, wearability and durability.

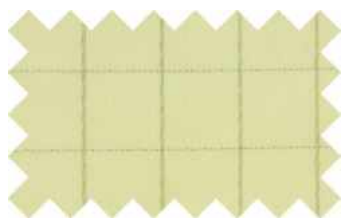
Advantages

- Over 70 different fabrics
- Immediate delivery from our stock
- Strict quality control from our profound knowledge and wide experience
- Continuous development to meet customer's new requirement
- Additional treatments, such as silicon free, teflon and antimicrobial, are available.

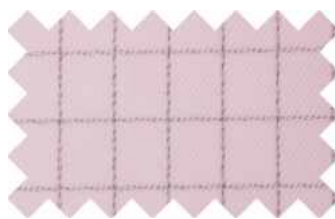
Applications

- Electronic and semiconductor Industries
- Medical and Pharmaceutical Industries
- Food Industry
- Paint Industry
- Aerospace Industry

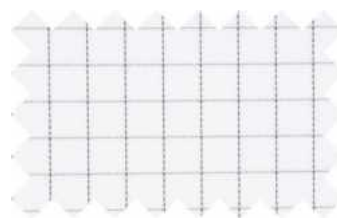
Lint Free Static Control Fabric



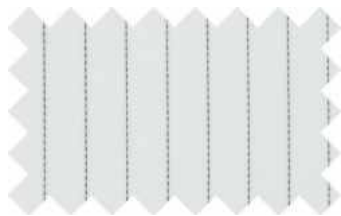
M01-F-001 (MDF-140)



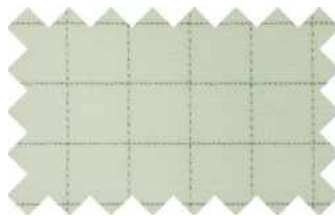
M01-F-002 (MDF-145)



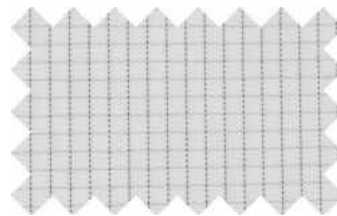
M01-F-003 (MDF-160)



M01-F-007 (MDF-170)

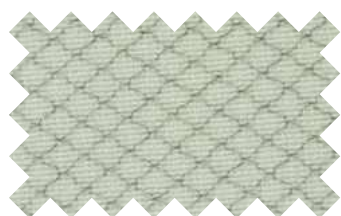


M01-F-014 (MDF-NIS-CK)



M01-F-005 (MDF-167)

Conductive Fabric



M03-F-001 (MDF-150)



M03-F-002 (MDF-152)



M03-F-003 (MDF-153)



M03-F-005 (MDF-156C)



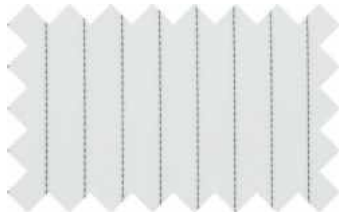
M03-F-004 (MDF-155)



M03-F-008 (MDF-270)

1 Fabrics & Garments

Sterilization Compatible Cleanroom Fabric



M02-F-001 (MDF-110)



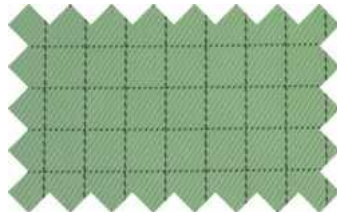
M02-F-003 (MDF-120)



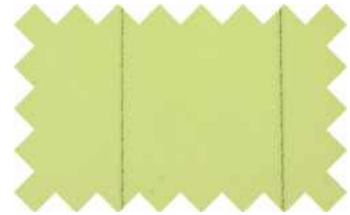
M02-F-004 (MDF-125)



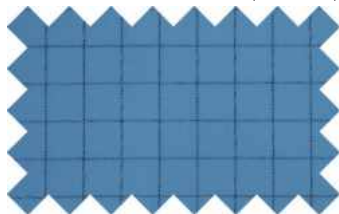
M02-F-005 (MDF-127)



M02-F-006 (MDF-130)



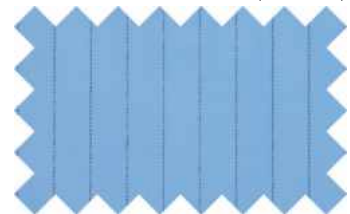
M02-F-008 (MDF-190)



M02-F-010 (MDF-210)



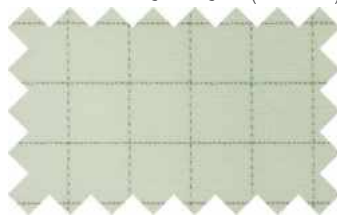
M02-F-011 (MDF-211)



M02-F-012 (MDF-220)



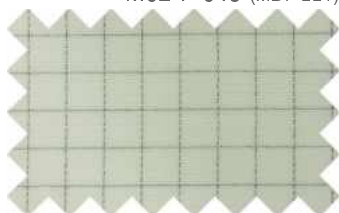
M02-F-013 (MDF-221)



M02-F-014 (MDF-146)



M02-F-015 (MDF-149)



M02-F-016 (MDF-165)



M02-F-017 (MDF-305)

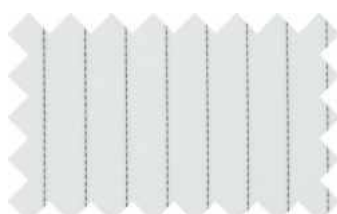


M02-F-018 (MDF-117)

ESD Chemical Resistant Fabric



M07-F-001 (MDF-230)

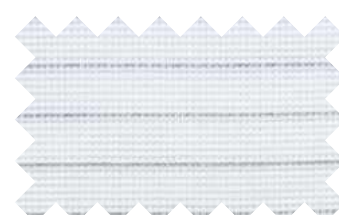


M07-F-004 (MDF-245)



M05-F-001 (MDF-250)

ESD Coolon Fabric



M05-F-002 (MDF-320)



M17-F-000 (MDF-215)



M12-F-002 (MDF-199Micro)

Non ESD Fabric

1 Fabrics & Garments

● ESD Coolon Fabric

Experience Innovative Cool & Enjoy More Comfortable Life!

Coolon is a powerful performance fiber with excellent moisture dispersion creating a natural and refreshing feel.

With the Cool Fiber Technology of Kolon, we have developed our own ESD Coolon Fabric with a Memory in 10mm conductive filament stripe(MDF-320) and a Pique in 7mm conductive filament stripe(MDF-250).

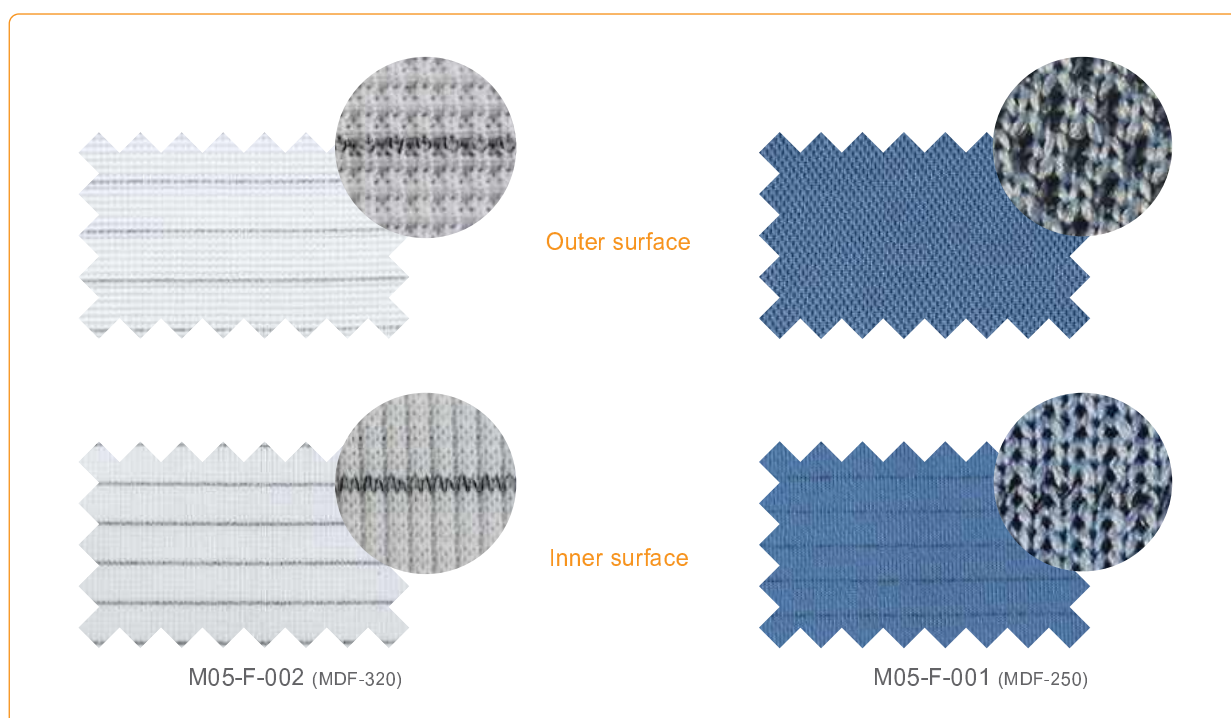
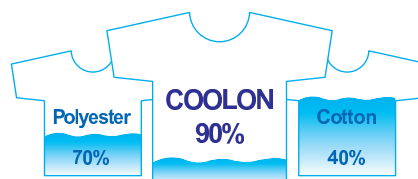
The Interlocking Design, also Known as Double Knitted Pattern, which is the umbrella term of Memory, Pique, etc., has different texture on both sides. The inside surface to be touched on the skin feels soft, like cotton while the surface facing outside has rough and wider in cross-section so that sweat from your skin will be evaporated and dried quickly by exposing wider surface of the fabric to the air.

Our ESD Coolon Fabric is one of the best choices for making Casual wear, Shirts and Sports wear for the people who handle any ESD sensitive materials or devices in EPA (ESD Protected Area).

Features

- Excellent ESD properties
- Good resistance to fading, shrinking and wrinkling.
- Improved breathability
- Quick moisture absorption
- Fast drying
- Dry and soft touch
- No particle generation
- Unique brightness
- Excellent durability
- Easy care and handling
- All-weather fabric

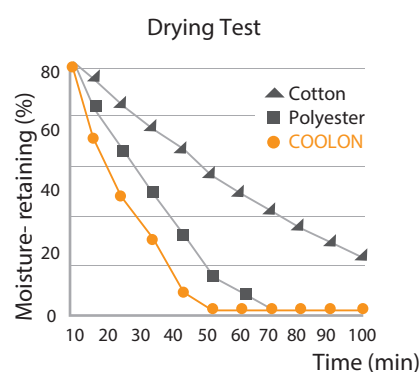
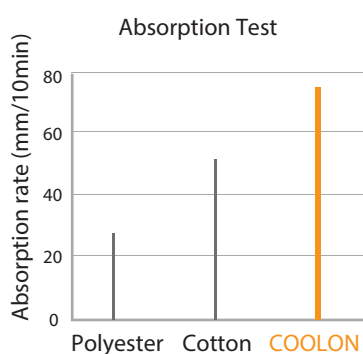
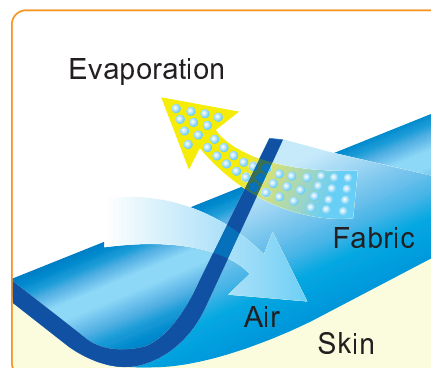
Drying rate (30min after washing)



1 Fabrics & Garments

What is COOLON®?

The COOLON is the brand name of functional moisture-wicking fiber developed by Kolon, which is one of the leading textile companies specialized in developing various synthetic fiber in Korea. It is specially-engineered polyester fiber to improve "breathability" compared to natural fiber like cotton.



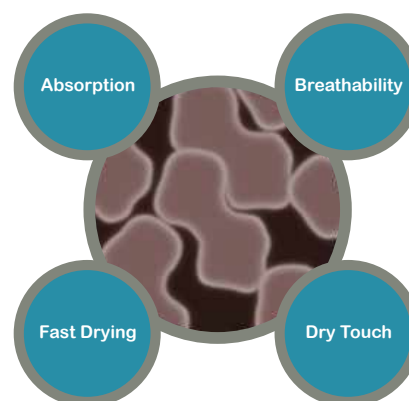
The Coolon fiber is not round, but slightly oblong in cross-section, like a peanut hull. It means that the surface of Coolon fiber in cross-section is wider than that of other fibers. This unique shape of the fiber creates capillary action that absorbs moisture through the core and out to the wider area on the surface of the fiber that increases evaporation.



M05-F-002 (MDF-250)



M05-F-002 (MDF-320)



The Cross-Section of Coolon Fiber

	MDF-250	MDF-320
Dimension	70"/72"	58"/60"
Weight(g/sqmt)	148	205
Compositions	Polyester (Coolon) 98%, Conductive Yarn 2%	
Surface Resistivity	10e6 - 10e7	1.3 x 10e6

1 Fabrics & Garments

• ESD Chemical Resistant Fabric

ESD Chemical Resistant Fabric(ECRF) is ideal for Cleanroom environment, especially where chemical related products are used and handled. There is special PU coating on ESD Cleanroom fabric, and we laminate thin chemical-proof film on the top of the coating to achieve maximum chemical resistant properties. The ECRF can protect people from any potential risks who are exposed in dangerous and harmful chemicals and will also provide you with particle and ESD safe working circumstances at the same time.

We can make several finished products with ECRF, such as ESD Arm Sleeves, ESD Apron, ESD Open-back Coat, etc.

Technical Specifications

Test	Warp	Weft	Unit	Test Method
Yarn	PFY 75D	PFY 100D	Denier	
ECF	F-901 (BASF)		BASF	
Density	192	92	Threads/Inch	
Weave	1/2 twill (5mm stripe)			
Dimension	58" / 60"		inch x yd	
Weight	166		GR/SQMT	
Thickness	0.18 ± 0.01		mm	
Friction Static Voltage (Back)	< 100		Volts	JIS-L1094B
Surface Resistance	10e10 - 10e11 (surface)		Ω	ASTM-D257
	10e6 - 10e7 (back)			
Index of Chemical Penetration	1. Sulfuric Acid(50%) - 0 2. Hydrochloric acid(36%) - 0 3. Nitric Acid(50%) - 0 4. Formic Acid(50%) - 0 5. Hydrofluoric Acid(40%) - 0 6. Sodium Hydroxide(40%) - 0 7. Hydrogen Peroxide(30%) - 0 8. Toluene(99.5%) - 0 9. Acetone(99.5%) - 0 10. Methanol(99.5%) - 0 11. Hexane(95%) - 0		%	ISO 6530-2005
Constructions of the Fabric			•Chemical Resistant Film •PU Coating •Cleanroom Fabric(MDF-170)	

REF : ESD Arm Sleeves(M24-F-001)
 ESD Apron(M25-F-001)
 ESD Open-back Coat(M26-F-001)
 ESD Chemical Resistant Gown(M30-F-001)



1 Fabrics & Garments

● CSM Rubber Sheet (Chloro sulfonated polyethylene)



● Fabrics and Garments

Descriptions

- Polyester fabric reinforced with rubber sheet

Specifications

- Chloro sulfonated polyethylene rubber - 518 grs/m²
- (Re: HYPALON®)
- Polyester fabric - 248 grs/m²
- Width - 56"
- Weight per liner - 1,000 grs/yd
- Thickness - 0.80±0.05 mm

Features

- Chemical resistant properties
- Anti-slip
- Low temperature bend (-45°F)
- Strong resistance to abrasion
- Autoclavable (withstand up to 120°C)
- Gamma-rad stable at min. 737kGy - max. 760.8kGy (certified by STERIS AST)
- Antistatic finish



Test	Warp	Weft	Unit	Test Method
Color	Tan			Visual
Width(trimmed)	56		inch	ASTM D 751-89
Total Weight	24.0 ± 3.0		oz/yd ²	ASTM D 751-89
Gauge	0.8 ± 0.05		mm	ASTM D 751-89
Mullen Burst	3450 (500.4)		kPa (psi)	ASTM D 751-06(2011)
Trapezoid Tear - Warp	221 (49.7)	167.20 (37.6)	N (lbf)	Fed. Std 191A-5136
Grab Tensile - Warp	1685 (378.8)	1276.6 (287)	N (lbf)	ASTM D 751-89
Elongation	36.4	39.1	%	ASTM D 751-06(2011)
Adhesion - Side 1	76.90 (17.29)		N (lbs. inch)	Fed. Std 191A-5970
Taber Abrasion - side 1	2,180		cycles	ASTM D 3389-16
Slip Resistance	Dry 0.98	Wet 0.88		ASTM D 1894-11



1 Fabrics & Garments

MEC Fabric Collection

No.	Model	ECF	Weave	Width (inch)	Weight (g/sqmt)	No.	Model	ECF	Weave	Width (inch)	Weight (g/sqmt)
1-1	MDF-507	F-901 (BASF)	1/2twill (3.5mm stripe)	58"/60"	96	3-4	MDF-110	B-31 (Kanebo)	1/2 twill (5mm stripe)	58"/60"	112
1-2	MDF-170	F-901 (BASF)	1/2twill (5mm stripe)	58"/60"	107	3-5	MDF-302	B-31 (Kanebo)	2/2twill (5mm stripe)	58"/60"	102
1-3	MDF-235	F-901 (BASF)	1/2twill (5mm stripe)	58"/60"	129	3-6	MDF-125	B-31 (Kanebo)	2/3 twill (5mm stripe)	58"/60"	118
1-4	MDF-245	F-901 (BASF)	1/2twill (5mm stripe)	58"/60"	166	3-7	MDF-303	B-31 (Kanebo)	Taffeta (8mm stripe)	58"/60"	115
1-5	MDF-171	F-901 (BASF)	1/2twill (5mm stripe)	58"/60"	107	3-8	MDF-304	B-31 (Kanebo)	Taffeta (12mm stripe)	58"/60"	112
1-6	MDF-503	F-901 (BASF)	1/2twill (5mm stripe)	58"/60"	79	3-9	MDF-190	B-31 (Kanebo)	1/2twill (20mm stripe)	58"/60"	107
1-7	MDF-157	F-901 (BASF)	1/2twill (5mm stripe)	58"/60"	175	3-10	MDF-306	F-901 (BASF)	Taffeta (2.5mm check)	58"/60"	97
1-8	MDF-501	F-901 (BASF)	2/3twill (5mm stripe)	58"/60"	107	3-11	MDF-142	B-31 (Kanebo)	1/2twill (4mm check)	58"/60"	169
1-9	MDF-195	F-901 (BASF)	Taffeta (20mm stripe)	58"/60"	83	3-12	MDF-307	B-31 (Kanebo)	2/3twill (4mm check)	58"/60"	115
1-10	MDF-167	F-901 (BASF)	1/2twill (2.5mm check)	58"/60"	109	3-13	MDF-211	B-31 (Kanebo)	Taffeta (5mm check)	58"/60"	93
1-11	MDF-505	F-901 (BASF)	1/2twill (2.5mm check)	58"/60"	109	3-14	MDF-210	B-31 (Kanebo)	Taffeta (5mm check)	58"/60"	96
1-12	MDF-160	F-901 (BASF)	1/2twill (5mm check)	58"/60"	107	3-15	MDF-308	B-31 (Kanebo)	Taffeta (5mm check)	58"/60"	100
1-13	MDF-161	F-901 (BASF)	1/2twill (5mm check)	58"/60"	107	3-16	MDF-309	B-31 (Kanebo)	Taffeta (5mm check)	58"/60"	90
1-14	MDF-512	F-901 (BASF)	Taffeta (5mm check)	58"/60"	104	3-17	MDF-310	B-31 (Kanebo)	Taffeta (5mm check)	58"/60"	71
1-15	MDF-162	F-901 (BASF)	2/3twill (5mm check)	58"/60"	107	3-18	MDF-311	B-31 (Kanebo)	Taffeta (5mm check)	58"/60"	133
1-16	MDF-502	F-901 (BASF)	2/3twill (5mm check)	58"/60"	107	3-19	MDF-312	B-31 (Kanebo)	Taffeta (5mm check)	58"/60"	104
1-17	MDF-166	F-901 (BASF)	2/2twill (5mm check)	58"/60"	120	3-20	MDF-199UT	B-31 (Kanebo)	Taffeta (5mm stripe)	58"/60"	95
1-18	MDF-169	F-901 (BASF)	2/2twill (5mm check)	58"/60"	107	3-21	MDF-118	B-31 (Kanebo)	1/2twill (5mm check)	58"/60"	113
1-19	MDF-145	F-901 (BASF)	2/3twill (7mm check)	58"/60"	109	3-22	MDF-165	B-31 (Kanebo)	1/2twill (5mm check)	58"/60"	119
1-20	MDF-506	F-901 (BASF)	2/3twill (3x10mm check)	58"/60"	107	3-23	MDF-313	B-31 (Kanebo)	1/2twill (5mm check)	58"/60"	105
1-21	MDF-509	F-901 (BASF)	2/3twill (5x3.5mm check)	58"/60"	107	3-24	MDF-314	B-31 (Kanebo)	2/1twill (5mm check)	58"/60"	102
1-22	MDF-140	F-901 (BASF)	1/2twill (10mm check)	58"/60"	116	3-25	MDF-315	B-31 (Kanebo)	2/2twill (5mm check)	58"/60"	108
1-23	MDF-513	F-901 (BASF)	1/2twill (10mm check)	58"/60"	109	3-26	MDF-316	B-31 (Kanebo)	2/2twill (5mm stripe)	58"/60"	148
1-24	MDF-156C	F-901 (BASF)	Taffeta (4mm check)	58"/60"	170	3-27	MDF-127	B-31 (Kanebo)	2/3twill (5mm check)	58"/60"	119
1-25	MDF-156CU	F-901 (BASF)	Taffeta (3.5mm check)	58"/60"	134	3-28	MDF-130	B-31 (Kanebo)	2/3twill (5mm check)	58"/60"	107
1-26	MDF-514	F-901 (BASF)	taffeta (5mm check)	58"/60"	118	3-29	MDF-148	B-31 (Kanebo)	2/3twill (5mm check)	58"/60"	115
1-27	MDF-515	F-901 (BASF)	Pique (4mm stripe)	55"	236	3-30	MDF-317	B-31 (Kanebo)	Taffeta (6mm check)	58"/60"	140
1-28						3-31	MDF-164	B-31 (Kanebo)	1/2twill (7mm check)	58"/60"	120
2-1	MDF-150	F-901 (BASF)	4bar net (diamond)	58"/60"	165	3-32	MDF-318	B-31 (Kanebo)	Rib (7mm check)	58"/60"	110
2-2	MDF-153	F-901 (BASF)	4bar net (diamond)	58"/60"	79	3-33	MDF-146	B-31 (Kanebo)	1/2twill (8mm check)	58"/60"	151
2-3	MDF-152	F-901 (BASF)	4bar net (diamond)	58"/60"	100	3-34	MDF-149	B-31 (Kanebo)	1/2twill (8mm check)	58"/60"	182
2-4	MDF-155	F-901 (BASF)	4bar net (diamond)	58"/60"	155	3-35	MDF-305	B-31 (Kanebo)	2/2twill (Tartan check)	58"/60"	160
2-5	MDF-250	F-901 (BASF)	Pique (7mm stripe)	70"/72"	148	3-36	MDF-319	B-31 (Kanebo)	2/2twill (5x6mm check)	58"/60"	130
2-6	MDF-320	F-901 (BASF)	Memory (10mm stripe)	60"	205	3-37					
2-7	MDF-270	F-901 (BASF)	Pique	60"	172	5-1	MDF-216	Non	Herringbone twill	58"/60"	140
2-8	MDF-270S	F-901 (BASF)	Pique	68"	323	5-2	MDF-215	Non	Taffeta	58"/60"	89
2-9						5-3	MDF-217	Non	1/2twill	58"/60"	151
3-1	MDF-221	B-31 (Kanebo)	Taffeta (5mm stripe)	58"/60"	92	5-4	MDF-199Micro	Non	Taffeta	58"/60"	95
3-2	MDF-220	B-31 (Kanebo)	Taffeta (5mm stripe)	58"/60"	93	5-5	MDF-218	Non	Taffeta	58"/60"	92
3-3	MDF-301	B-31 (Kanebo)	Taffeta (5mm stripe)	58"/60"	95	5-6	MDF-219	Non	Taffeta	58"/60"	145

1 Fabrics & Garments

• Cleanroom/ESD Garment

Cleanroom/ESD Garment is used in the place where proper protection against particle contamination and ElectroStatic Discharge is required. We can supply you with this garment as well as the fabric.

We have various styles of garments such as Coverall, Gown, Lab Coat, T-shirt, etc. in our range. requirement.

Features

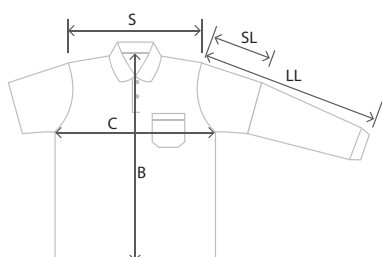
- Produced on your required design and fabric
- Produced by skilled workers with wide experience
- Produced with high quality fabric and sewing accessories
- Considering air permeability, comfortability, wearability and durability
- Strict quality control from fabric to finished garment
- Small quantity also can be supplied

ESD Coolon Shirts



M06-F-001 (MDF-250CS)

- MDF-250CS: T-shirt with collar and short sleeve
- MDF-250RS: T-shirt with round neck and short sleeve
- MDF-250CL: T-shirt with collar and long sleeve
- MDF-250RL: T-shirt with round neck and long sleeve

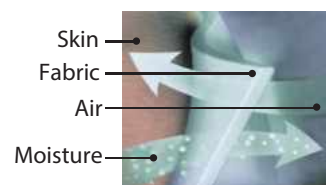
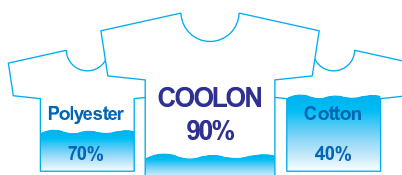


ESD Coolon T-shirt is made of 100% polyester with embedded ECF (Electro-Conductive Fiber) in stripe pattern. This special fabric, made in Korea, is under well controlled QC, and generates significantly low lint compared to other normal fabric.

It is comfortable thanks to quick sweat evaporation and good ventilation, and it has extra durability, light weight, etc. The touch is like DuPont Coolmax fabric, which is the material of popular sports wear.

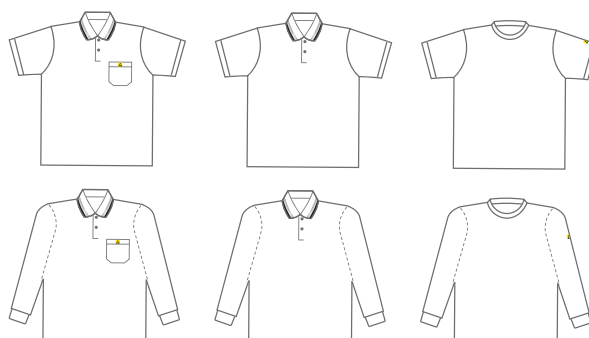
ESD Coolon T-shirt is suitable for the people working in hot and high humidity environment, and is also a good choice for the workers handling ESD sensitive products by virtue of its good ESD properties.

Drying rate (30min after washing)



Mark	Chest (C)	Back Length (B)	Shoulder Width (S)	Sleeve Length	
				Short (SL)	Long (LL)
XS	19.5"	27"	18.5"	8"	21.5"
S	20.5"	28"	19"	8.5"	22"
M	21.5"	28.5"	19.5"	8.5"	22.5"
L	22.5"	29"	20"	9"	23.25"
XL	23.5"	30"	21"	9.5"	24"
2XL	24.5"	31"	21.5"	10"	24.5"
3XL	25.5"	32"	22.5"	10.5"	24.5"

Color



1 Fabrics & Garments

EPA Shirts

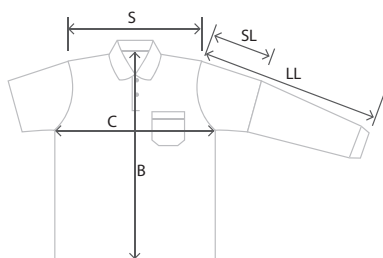


M32-F-001 (SZWH)



Descriptions

- Designed for using in EPA area with on properties.
- No static, quickly disperse the sweat.
- Soft and dry touch like cotton (new coolon fabric)
- Colors: White, Royal Blue, Black
- Tailored in UNISEX Design.
- Colored conductive sewing thread



Mark	Chest (C)	Back Length (B)	Shoulder Width (S)	Sleeve Length	
				Short (SL)	Long (LL)
XS	19.5"	27.5"	18.5"	8"	23.5"
S	20.5"	28"	19"	8.5"	24"
M	21.5"	28.5"	19.5"	8.5"	24"
L	22.5"	29"	20"	9"	24.5"
XL	23.5"	30"	21"	9.5"	25"
2XL	24.5"	31"	22"	10"	25.5"
3XL	25.5"	32"	23"	10.5"	26"
4XL	26.5"	32.5"	23.5"	11"	26.5"
5XL	27.5"	33"	24"	11.5"	27"
6XL	28.5"	33"	24"	11.5"	27"

Sleeve to Sleeve Test



Features

- Meet ANSI/ESD S20.20-2014 (ANSI/ESD STM2.1, Groundable Static Control Garment System)
- Compliance with EN 61340-5-1 and EN 61340-2-1
- Typical surface resistance: 10e6~10e7 ohms. (both sides)

Recommended Cleaning Process

- Machine washable up to 40°C
- Hang dry at 50°C (120°F) or lower
- Tumble-dry at low temperature
- Do not Bleach
- Do not use alkali, acid or fabric softner containing chlorine bleach

1 Fabrics & Garments

Product Line-up

Zip-up Shirts



M32-F-001 (SZWH)
M32-F-001 (SZRB)
M32-F-001 (SZBK)

Zip-up Shirts (Long Sleeve)



M32-F-002 (LZWH)
M32-F-002 (LZRB)
M32-F-002 (LZBK)

Round Shirts



M32-F-003 (SRWH)
M32-F-003 (SRRB)
M32-F-003 (SRBK)

Polo Shirts



M32-F-007 (SCWH)
M32-F-007 (SCRB)
M32-F-007 (SCBK)

V-neck Shirts



M32-F-005 (SVWH)
M32-F-005 (SVRB)
M32-F-005 (SVBK)

ESD Cotton Shirts

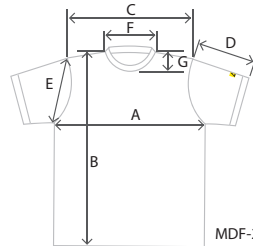


M21-F-001 (MDF-270CS)

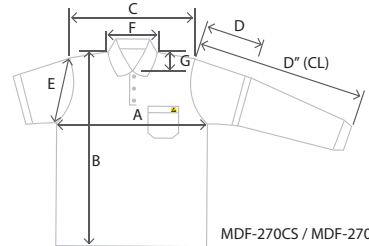
MDF-270CS: T-shirt with collar and short sleeve
 MDF-270RS: T-shirt with round neck and short sleeve
 MDF-270CL: T-shirt with collar and long sleeve
 MDF-270RL: T-shirt with round neck and long sleeve

Features

- Composition: 80% of Cotton, 16.4% of Polyester & 3.6% of ECF
- Weight: 172g/sqmt
- Typical point to point resistance: 10e6-10e7 ohm



MDF-270RS



MDF-270CS / MDF-270CL

(cm)

Size	A	B	C	D	D'	E	F		G	
				RS/CS	CL		RS	CS/CL	RS	CS/CL
XS	47	63	41	22.5	57	21.5	18	17	9.5	9.6
S	49.5	65	42.5	23.5	57	22	18.5	17	9.8	9.6
M	52	67	44	24.5	58	23	19	17	10.1	9.6
L	54.5	69	45.5	24.5	60	24	19.5	18	10.4	10.3
XL	57	71	47	25.5	60	25	20	18	10.7	10.3
2XL	59.5	73	48	26.5	62	25.5	20.5	18	11	10.3
3XL	62	75	50	26.5	62	26	21	19	11.3	10.3
4XL	64.5	77	52	27.5	63	26.5	21	19	11.3	10.3
5XL	67	79	54	28.5	63	27	21	19	11.3	10.3

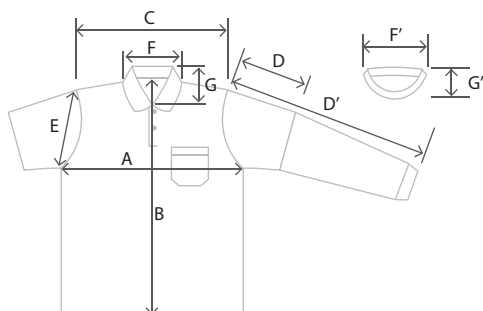
*Allowance : ±5%



M21-F-006

Features

- Composition: 96% of Cotton and 4% of ECF
- Weight: 185g/sqmt
- Typical point to point resistance: 10e6-10e7 ohm



(cm)

		S	M	L	XL	2XL	3XL	4XL	5XL
A	Chest	49	51	53.5	56	58.5	61.5	64.5	67.5
B	Height	70	72	74	77	79	81	83	85
C	Overarm	41.5	43	45	47	49	51	53	55
D	Sleeve	24	25	26	27	28	30	31	32
D'	Sleeve	57	58	59	60	61	62	63	64
E	Sleeve/W	21	22	24	26	27.5	29	30	31
F	Neck	17	17	17	18	18	18	18	19
F'	Neck	18	18	19	19	20	20	21	21
G	Neck/H	9	9	9	10	10	10	10	10
G'	Neck/H	10	10	10	10.5	10.5	10.5	11	11

1 Fabrics & Garments

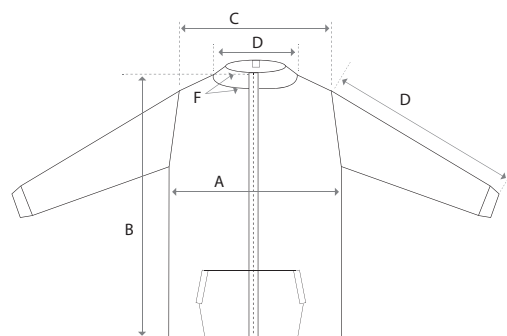
ESD Cardigan



M35-F-001

Features

- Composition: 91% of Polyester (Polar fleece) and 9% of ECF
- Weave: Terry
- Weight: 250g/sqmt
- Typical point to point resistance: 10e6 -10e7 ohm



(cm)

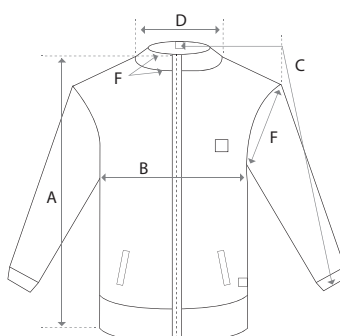
		XS	S	M	L	XL	2XL	3XL	4XL	5XL
A	Chest	53	54	55	57.5	60	62.5	64	65.5	67
B	Back Height	63.5	65	66.5	69	71.5	74	75.5	77	78.5
C	Shoulder	41	43	45	47	48.5	50	52	54	55
D	Arm Length	57	58	59	60	61	62	63	64	65
E	Back Neck	17	17	17	17	18	18	18	19	19
F	Depth of Neck	9	9	9	9	9	9	9	9	9



M21-F-005

Features

- Composition: 90% of Cotton, 8% of Polyester and 2% of ECF
- Weight: 300g/sqmt
- Typical point to point resistance: 10e6 -10e7 ohm



(cm)

		XS	S	M	L	XL	2XL	3XL	4XL	5XL
A	Back Height	63	65	67	69	71	73	75	77	79
B	Chest	50	53	56	59	62	65	68	71	74
C	Sleeve	88	89.25	90.5	91.75	93	95.25	95.5	96.75	98
D	Back Neck	19	19.5	20	20.5	21	21.5	22	22.5	23
E	Depth of Neck	7.5	8	8.5	9	9.5	10	10.5	11	11.5
F	Sleeve at Widest	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5

1 Fabrics & Garments

ESD Light Gown

Descriptions

- Designed for using in EPA with excellent ESD properties.
- Light weight: 79gr/sqmt
- ESD logo and a pen slot on the pocket
- Grounding studs (Left & Right)
- Cuff snap buttons (Front & Back)
- Fabric: MDF-153U (90% Polyester & 10% Carbon)
- Made In Korea



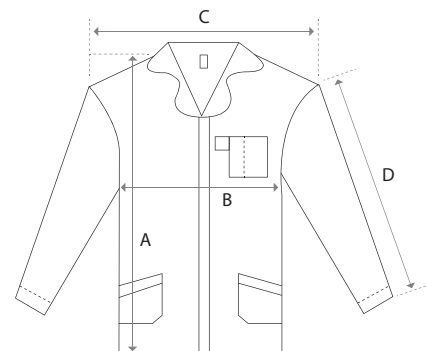
M04-F-013

Features

- Meets the performance under ANSI/ESD S20.20-2014 (ANSI/ESD STM2.1, Groundable Static Control Garment System)
- Compliance with EN 61340-5-1 and EN 61340-2-1
- Typical sleeve to sleeve resistance: less than 3.5×10^7 ohm

Size	XS	S	M	L	XL	2XL	3XL
A	72	74	76	78	80	82	84
B	96	104	114	124	134	144	154
C	40	44	49	54	59	64	69
D	58.5	61	63.5	66	68.5	71	73.5

(cm)



ESD Lab Coat



M04-F-002

Descriptions

- Hip length, shirt collar
- 3 patch pockets with triangular reinforcement
- Snap at front opening
- All seams were joined with serge
- Shirt cuffs
- 100% conductive sewing thread was used
- Fabric: MDF-150 (small diamond, S/R: 10^6)

(cm)

Size	Chest	Sleeve	Center Back	Shoulder
XXS	101	46	66	47
XS	107	48	69	48
S	112	51	71	51
M	119	55	76	52
L	123	57	77	55
XL	131	58	80	58
2XL	135	60	83	61
3XL	140	63	86	63

1 Fabrics & Garments

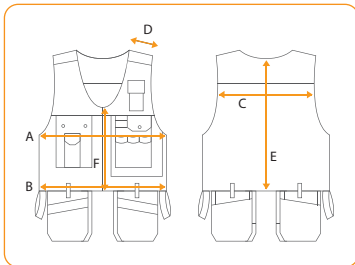
ESD Tool Vest



M36-F-001

Features

- Composition: 62% of Polyester, 34% of Cotton & 4% of ECF
- Weight: 208g/sqmt
- Typical point to point resistance: 10e6-10e7
- Numerous tool pockets & holders



		(cm)												
	Description	42	44	46	48	50	52	54	56	58	60	62	64	66
A	1/2 chest	47.0	49.0	51.0	53.0	55.0	57.0	59.0	61.0	63.0	65.0	67.0	69.0	71.0
B	1/2 bottom	46.0	48.0	50.0	52.0	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
C	Back width	34.0	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0	46.0
D	Shoulder	9.8	10.1	10.4	10.7	11.0	11.3	11.5	11.9	12.2	12.5	12.8	13.1	13.4
E	Back length	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	63.0	64.0	65.0	65.0
F	Zipper length	32.0	32.0	32.0	34.0	34.0	34.0	34.0	36.0	36.0	36.0	38.0	38.0	38.0

Cleanroom Underwear



M12-F-000

Features

- Static dissipative (MDF-199UT, MDF-309)
- High absorbency ratio of sweat
- Soft handle and light weight
- Comfortable feeling
- Free from particle generation
- Pre-filtration of skin flag generated from human body
- Gamma compatible and autoclavable
- Substitutable natural fiber inner-wear

Applications

- Worn underwear with laboratory coverall in cleanroom class 100 to 1 (class M1.5, M2.5, M3.5)
- Worn as an easywear in white gown at the hospital



MDF-309(3-16)



MDF-199UT(3-20)



MDF-199Micro(5-4)

Headgear



M11-F-000

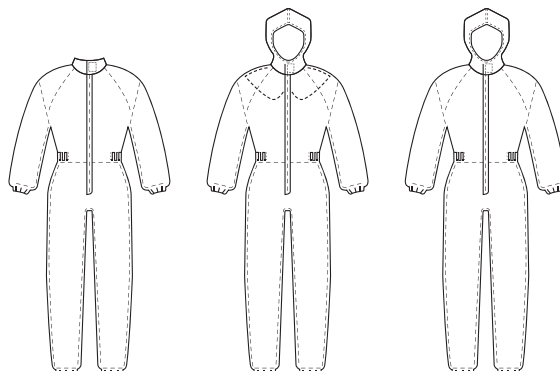
The Headgear is also required in Cleanroom together with Cleanroom garments to block particles generated from worker's head and neck. Customized designs and different fabrics are also available on request.

1 Fabrics & Garments

High Clean Coverall



M04-F-008



M04-F-008

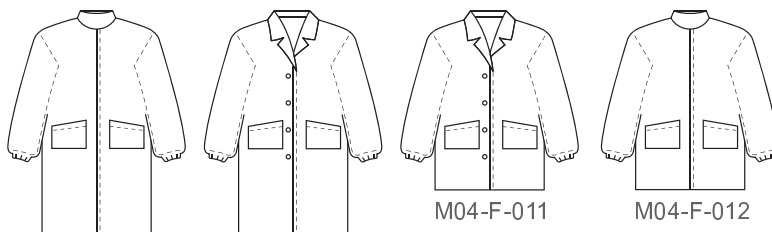
M04-F-009

M04-F-010

Cleanroom Gown



M04-F-007



M04-F-006

M04-F-007

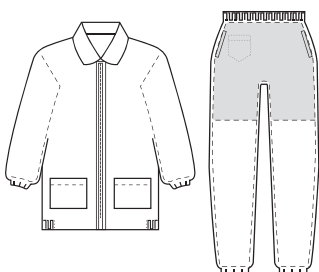
M04-F-011

M04-F-012

● Cleanroom & ESD Apparel ready-made (Economic Type)

Fabric: 5mm strip, Polyester 98% , Carbon 2% / Color: Sky Blue, White / Design: 6 types

ESD Jacket and Pants

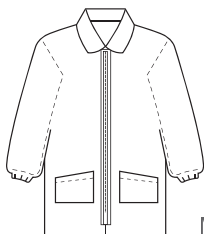


M40-F-001

(cm)

	S	M	L	XL	2XL	3XL	4XL
Chest(±1.5)	108	112	116	120	124	128	132
L(Back)(±1)	62	64.5	67	69.5	72	74.5	77
L(Sleeves)(±1)	52	54	56	58	60	62	64
Wrist(±0.5)	20	20	21	21	22	22	22
L(Pants)(±1.5)	98	100.5	103	105.5	108	110.5	113
Ankle(±0.5)	24	24	25	25	26	26	27
Waist(Pants)(±1)	50	53	56	59	62	65	68

ESD Gown



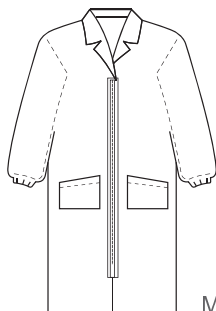
M41-F-001

(cm)

	S	M	L	XL	2XL	3XL	4XL
Chest(±1.5)	104	108	112	116	120	124	128
L(Back)(±1)	66	69	72	75	78	81	84
L(Sleeves)(±1)	52	54	56	58	60	62	64
Wrist(±0.5)	20	20	21	21	22	22	23
W(Shoulder)(±1)	43.5	44.7	46	47.3	48.5	49.8	51
Front Zipper	51	54	57	60	60	60	60

1 Fabrics & Garments

ESD Gown

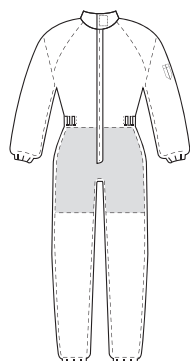


M41-F-002

(cm)

	S	M	L	XL	2XL	3XL	4XL
Chest(±1.5)	104	108	112	116	120	124	128
L(Back)(±1)	98	102	106	110	114	118	122
L(Sleeves)(±1)	53	55	57	59	61	63	65
Wrist(±0.5)	20	20	21	21	22	22	23
W(Shoulder)(±1)	42.5	43.7	45	46.2	47.5	48.2	49.5

Cleanroom Coverall

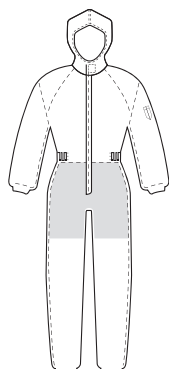


M42-F-001

(cm)

	S	M	L	XL	2XL	3XL	4XL
Chest(±1.5)	110	114	118	122	126	130	134
L(Back)(±1.5)	155	160	165	170	175	180	185
L(Sleeves)(±1.5)	79	81	83	85	87	88	89
Wrist(±0.5)	19	19	20	20	21	21	22
Ankle(±0.5)	23	23	24	24	25	25	26
Waist(±1)	85	89	93	97	101	105	109

Cleanroom Coverall with Hood

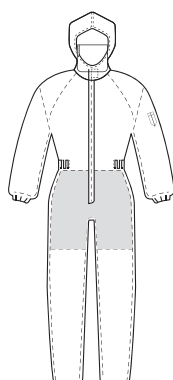


M43-F-001

(cm)

	S	M	L	XL	2XL	3XL	4XL
Chest(±1.5)	106	110	114	118	122	126	130
L(Back)(±1.5)	150	155	160	165	170	175	180
L(Sleeves)(±1.5)	79	81	83	85	87	88	89
Wrist(±0.5)	19	19	20	20	21	21	22
Ankle(±0.5)	23	23	24	24	25	25	26
Waist(±1)	78	83	87	91	95	99	103
Pen holder distance(±0.3)	25.3	26	26.8	27.5	28.2	29	29.7

Cleanroom Coverall with Mask&Hood



M44-F-001

(cm)

	S	M	L	XL	2XL	3XL	4XL
Chest(±1.5)	110	114	118	122	126	130	134
L(Back)(±1.5)	150	155	160	165	170	175	180
L(Sleeve)(±1.5)	79	81	83	85	87	88	89
Wrist(±0.5)	19	19	20	20	21	21	22
Ankle(±0.5)	23	23	24	24	25	25	26
Waist(±1)	85	89	93	97	101	105	109

1 Fabrics & Garments

• Flame Retardant ESD Lab Coat



ECF	BASF (Resist 24DTEX)
Weave	4 bar net (8mm diamond)
Composition	Flame retardant polyester (phosphorous compound based) 95% Conductive carbon yarn mixed warp knif fabric 5%
S/R	10e5 ~ 10e6 ohm

Applications

- SMT line worker
- IC Inspection line
- Mobile phone assembly line
- ESD protected area (EPA)
- Automobile paint curing process line
- Automotive manufacturing

Descriptions

- Mid-thigh length, lapel collar, 3 patch pockets with triangular reinforcements, snaps at front opening, sleeve at front opening sleeve hems and snaps on waist pocket upper outside corner
- EPA symbol on the left chest
- Stainless based conductive sewing thread was used
- Color: Royal blue, White
- Fabric: 8mm diamond grid conductive fabric

Features

- Superior self-extinguishing and flame retardant properties
- Free of lint generation from the fabric (100% continuous filament yarn)
- Electrically groundable static control garment system (RTG: <3.5 X 10E7 ohm)
- Meets the performance under ANSI/ESD S20.20-2014 (ANSI/ESD STM2.1, Groundable Static Control Garment System)
- Two snaps for grounding cords
- Porus type fabric pattern gives excellent air permeability
- Quick dry & soft touch

1 Fabrics & Garments

• ESD Chemical Resistant Apron, Sleeves, Open-back Coat and Gown

Chemical Resistant Apron, Sleeves, Coat and Gown are required to protect workers from contamination in Cleanroom or any other working areas handling chemicals as they are waterproof and anti-chemical. They are made of special coated and laminated ESD fabric(MDF-230) and have good ESD properties on the other side.

Apron

M08-F-001

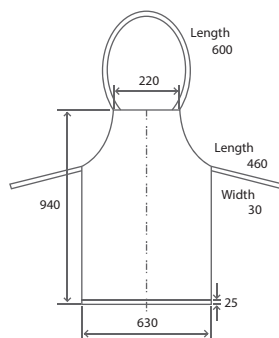


SR: 10e6 - 10e7 ohm
Size: 620mm(W) x 770mm(L)

M25-F-001



SR: 10e6 - 10e7 ohm (back)
10e10 - 10e11 ohm (front)
Size: 630mm(W) x 940mm(L)



Open-back Coat

M26-F-001



SR: 10e6 - 10e7 ohm (back)
10e10 - 10e11 ohm (front)

(cm)

Size	Chest	Length	Sleeves	Shoulder
S	57	107	61	42.5
M	60	110	62	45
L	62.5	113	63	47.5
XL	65	116	64	50
2XL	67.5	119	65	52.5
3XL	70	122	66	55

Sleeves

M09-F-001



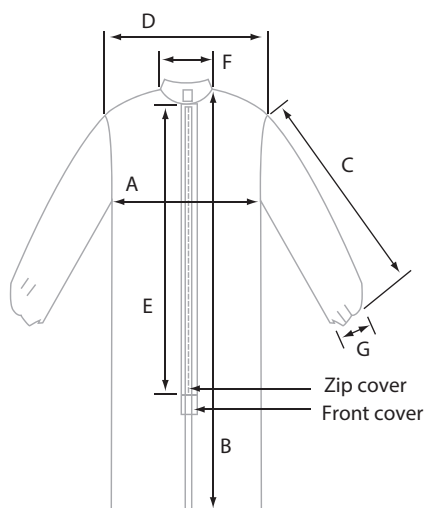
SR: 10e6 - 10e7 ohm
Size: 170mm(W) x 350mm(L)

M24-F-001



SR: 10e6 - 10e7 ohm (back)
10e10 - 10e11 ohm (front)
Size: 200mm(W) x 400mm(L)

Gown



M30-F-001

SR: 10e6 - 10e7 ohm (back)
10e10 - 10e11 ohm (front)

(cm)

Size	A	B	C	D	E	F	G
S	51.5	101	57.5	39.5	53	50	19
M	54	104	58	42	53	50	19
L	56.5	107	59.5	44.5	53	50	19
XL	59	110	61.5	47	53	50	19
2XL	61.5	113	62.5	49.5	53	50	20
3XL	64	116	62.5	52	53	52	20

1 Fabrics & Garments

• Kevlar/Nomex Sleeves

Exceptional cut slash and heat resistivity.

Dupont™Kevlar® Fiber and Dupont™Nomex® Fiber are almost five times stronger than steel on an equal weight basis and has a high tensile strength that protects arms during hazardous jobs.

Applications

- Great for steel metal
- Glass handling, canning
- Recycling, welding
- Injection molding
- Metal stamping
- Automotive manufacturing
- Steel manufacturing
- Precision assembly

Kevlar Sleeves



M16-F-001

- Dupont™Kevlar® Fiber
- Cut level 3

Length: 14", 18" (± 5%)
Weight: 37g, 47g (± 5%)
Packing: 100 prs/ctn

Kevlar Terry Knit Sleeves



M16-F-003

- Dupont™Kevlar® Fiber
- Cut level 4
- Excellent wearability
- Soft touch
- Stable heat resistivity
- Invisible stitch provides superior comfort on the cuff side

Length: 18" (± 5%)
Weight: 188g (± 5%)
Packing: 50 prs/ctn

Kevlar Sleeves with Thumb Holes



M16-F-002



- Dupont™Kevlar® Fiber
- Cut level 3
- Extend the protection area to palm & back

Length: 14", 18" (± 5%)
Weight: 38g, 46g (± 5%)
Packing: 100 prs/ctn

• Cut Resistant Sleeves



M10-F-001

Length: 45cm (± 5%)
Weight: 70g (± 5%)
Packing: 200 prs/ctn

• Cut Resistant Cool Sleeves



M10-F-002

Length: 37cm (± 5%)
Weight: 80g (± 5%)
Packing: 200 prs/ctn

Cut Resistant Sleeves/Cut Resistant Cool Sleeves prevent accidents when working with knives and handling other sharp materials and instruments. They are comfortable and have no seam irritating skin trouble.

Features

- Material: HPPE, Nylon, Spantex
- Cut level 3
- Puncture resistance
- Light weight
- Delicate and precise operations

1 Fabrics & Garments

• ESD Socks

ESD Socks will be a good choice for any employees working in the manufacturing process of electronic components where static control is required.



Features

- Good ESD properties
- Low particles generation

Applications

- Assembly work in electronics productions & semiconductors

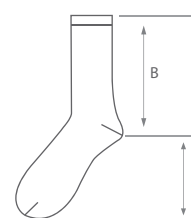
SR: 10e5 - 10e7 ohm/sq

Material: Cotton 81%
Spandex 16%
Carbon yarn 3%

Size: M, L, XL

Color: Light grey

Packing: 1prs/Bag



(cm)

	M	L	XL
A	20	23	25
B	13	14	15

• Cleanroom Socks



Features

- No particle generation
- Cleanroom compatible

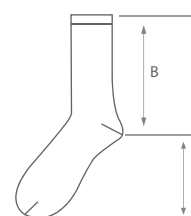
Applications

- Suitable for Cleanroom workers

Material: Polyester 100%

Size: S, M, L, XL

Color: White



(cm)

	S	M	L
A	23	24	25
B	25	26	27



Features

- No particle generation
- Cleanroom compatible
- Tube socks with no heel

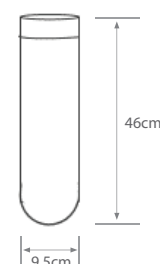
Applications

- Suitable for Cleanroom workers

Material: Polyester 100%

Size: 9.5(W) x 46(L) with 5.3cm cuff

Color: White, Pink, etc.



1 Fabrics & Garments

• Lint Free Sewing Thread

Non-ESD pvolyester sewing thread



M13-F-001

- Free of particle generation
- Color: White, Sky Blue, Navy Blue and Olive Green
- Standard Packing: 245 grams/cone, 10 cones/box, 10 boxes/carton

Conductive carbon yarn thread



M13-F-002

- Free of particle generation & ESD control
- S/R: 10e6 ohm
- Color: Grey
- Standard Packing: 245 grams/cone, 10 cones/box, 10 boxes/carton

Conductive stainless yarn thread



M13-F-004

- Meets ANSI/ESD S20.20-2014
- Composition: Polyester 93%, Stainless 7%
- S/R: 10e3 ohm
- Thickness: 466 denier(3 ply)
- Packing: 245grs/cone, 4700m/cone.

Conductive silver yarn thread



M13-F-005

- PHARMACEUTICAL, MEDICAL
- Composition: Polyester 98%, Silver 2%
- S/R: 10e3 ohm
- Thickness: 336denier
- Packing: 245 grs/cone, 6000m/cone

1 Fabrics & Garments

• Conductive Ribbon



M14-F-001



M14-F-002



M14-F-004

- S/R: 10e6 ohm
- Color: Grey
- Standard Size & Packing
 - 1) Width: 3.2mm / 500 yards/bobbin, 10 bobbins/box
 - 2) Width: 13mm / 100 yards/bundle, 10 bundles/box

Conductive Silver Ribbon

- Width: 6mm
- Length: 1,000yard/bobbin
- Composition: Polyester yarn 98%, Silver yarn 2%
- S/R: 10e3 ohm

• Conductive Knitted Cuff Fabric



M15-F-001 (MDF-159)



M15-F-010

• Conductive Spiral Cuff



M15-F-009

Test	M15-F-001 (MDF-159)	M15-F-010	M15-F-009
Yarn (Denier)	DTY 300D	DTY 300D	DTY 150D
ECF (BASF)	F-901 (BASF)	F-901 (BASF)	Silver Plated Yarn(39/10 dtex)
Density (Threads/Inch)	18W X 32C	18W X 32C	22W x 29C
Weave	1 X 1 RIB	1 X 1 RIB	1 x 1 RIB
Dimension (cm x yd)	8cm Tube X 100 yds	8cm Tube X 100 yds	6 pcs (3 pairs) / yd x 100 yds
Weight (gr/liner yd)	54	54	54
Surface Resistance (Ω)	10e6 - 10e7	10e7 - 10e9	10e2 - 10e3

2 Footwear

• Conductive Shoes

Material - Patented PVC outsole + ESD insole + Artificial leather cover

Advantage - RTG: 10e4-10e6 ohm, conductive ESD control, extremely low static generation, reliable steady resistivity, no marking on the floor.



M07-A-009 (BCS-320)



M07-A-012 (BCS-321)



M07-A-013 (BCS-322)



M07-A-014 (BCS-323)



M07-A-015 (BCS-324)



M07-A-011 (BCS-328)



M07-A-010 (BCS-327)

Size	220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300 (mm)
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M07-A-018 (YCS-321)



M07-A-019 (YCS-328)

Size	225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300 (mm)
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2 Footwear

• Static Dissipative Shoes

Material - PVC outsole + ESD insole + Artificial leather cover

Advantage - RTG: 10e6-10e8 ohm, cost effective and the most popular design, anti-slip, abrasion resistant, low particles generation, durable and long lasting, good wearability.



Size	220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300 (mm)
------	--

Material - PU outsole + ESD insole + Artificial leather cover

Advantage - RTG: 10e6-10e8 ohm, light weight, recyclable PU outsoles, comfortable cushion, abrasion resistant, extremely low particles generation.



27 Footwear

Size	220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300, 310, 320 (mm)
------	--

Material - PU outsole + T/C insole + Artificial leather cover + Nylon mesh fabric

Advantage - RTG : 10e7-10e9 ohm, economical type, light weight, good ventilation, durable and long lasting, less-fatigue, additional stitching of outer sole.



Size	225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300, 310 (mm)
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2 Footwear

• Static Dissipative Safety Shoes

Material - PU outsole + T/C in sole + Artificial leather cover + Steel toe cap

Advantage - RTG: 10e7-10e9 ohm, safety footwear, recyclable PU outsole, durable and long lasting, non-slip, oil resistant, abrasion resistant, shock absorption.



M05-A-001 (BTU-510)



M05-A-004 (BTU-510 Black)



M05-A-002 (BTU-515)



M05-A-007 (BTU-516)



M05-A-005 (YTU-510)



M05-A-006 (YTU-515)



M05-A-008 (YTU-516)



M05-A-010 (YTU-517)



M05-A-009 (BTU-540)

Size	225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300 (mm)
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• Conductive Slipper

Material - PU outsole + Patented conductive bottom sole + ESD insole

Advantage - RTG: 10e4-10e6 ohm, extremely low static generation, less fatigue, convenient wearability for daily use, long lasting, low particles generation.



M09-A-006 (BPU-435C)

Size	220, 230, 240, 250, 260, 270, 280, 290 (mm)
------	---

2 Footwear

• Static Dissipative Slipper

Material - PU outsole + ESD PU or PVC insole + Artificial leather cover

Advantage - RTG: 10e6-10e8 ohm, economical type, less fatigue, convenient wearability for daily use, long lasting, low particles generation.



M03-A-001 (BPU-420)



M03-A-007 (BPU-427)



M03-A-008 (BPU-428)



M09-A-004 (BPU-435)



M03-A-006 (BPU-426)



M03-A-009 (BPU-429)



M03-A-011 (JPU-451)



M03-A-012 (JPU-450)

Size 220, 230, 240, 250, 260, 270, 280, 290 (mm)

• ESD Antifatigue Sandals



M24-A-001



M24-A-002



M25-A-001

• ESD Antifatigue Slippers

	ESD Antifatigue Sandals & Slippers		
Product	1. ESD Antifatigue Sandals		2. ESD Antifatigue Slippers
Type	Type A	Type B	-
Item Code	M24-A-001	M24-A-002	M25-A-001
Surface Resistance	10E5 - 10E6 ohm		
Available Size(mm)	220, 230, 240, 250, 260, 270, 280, 290		

**Sandals and Slippers are made with the same materials

2 Footwear

• Static Dissipative Boots



M02-A-001 (BSB-330)



M02-A-002 (BSB-333)

Material - PVC outsole + ESD insole + Artificial leather cover + Lint free ESD fabric leggings

Advantage - RTG: 10e6-10e8 ohm, cost effective, anti-slip, abrasion resistant, low particles generation, durable and long lasting, good wearability, cleanroom applicable.

Size	220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300 (mm)
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M02-A-008 (PUB-392)



M02-A-009 (PUB-393)

Material - PU outsole + T/C insole + Artificial leather cover + Lint free ESD fabric leggings

Advantage - RTG : 10e7-10e9 ohm, cost effective design, light weight, durable and long lasting, less-fatigue, additional stitching of outer sole, cleanroom applicable

Size	225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300, 310 (mm)
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M02-A-003 (BUB-381S)



M02-A-004 (BUB-382)



M02-A-005 (BUB-383)



M02-A-022 (BUB-388)



M02-A-023 (BUB-389)

Material - PU outsole + ESD insole + Artificial leather cover + Foam Laminating fabric + Lint free ESD fabric leggings + sponge reinforced
Advantage - RTG: 10e6-10e8 ohm, light weight, recyclable PU outsoles, comfortable cushion, extremely low particles generation, cleanroom applicable

Size	220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 280, 290, 300, 310, 320 (mm)
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2 Footwear

• Conductive Boots

Material - Patented conductive PVC outsole + ESD insole + Artificial leather cover + Lint free ESD fabric leggings

Advantage - RTG: 10e4-10e6 ohm, conductive ESD control, extremely low static generation, reliable steady resistivity, no marking on the floor, cleanroom applicable.

Size	220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300 (mm)
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M08-A-001 (BCB-340)

• Static Dissipative Safety Boots

Material - PU outsole + T/C insole + Artificial leather cover + Steel toe cap + Lint free ESD fabric leggings.

Advantage - RTG: 10e7-10e9 ohm, safety footwear, recyclable PU outsole, durable and long lasting, non-slip, oil resistant, abrasion resistant, shock absorption, low particles generation, cleanroom applicable.



M06-A-001 (BTU-530)



M06-A-002 (BTU-533)

Steel toe cap



Size	225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 290, 300 (mm)
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• Conductive Overboots

Material - Patented conductive PVC sole + Lint-free cleanroom fabric + Nylon strap and buckle

Advantage - RTG: 10e4-10e6 ohm, cost effective, soft and flexible, extremely low static generation, reliable steady resistivity, no marking on the floor.



M10-A-001 (BCO-360)

SUO-442

Size	XS, S, M, L, XL
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• Static Dissipative Overboots

Material - Static dissipative Fishbone Designed Hypalon Sole(Chlorosulfonated Polyethylene(CSM)+natural rubber+conductive Compound) + Lint-free cleanroom fabric + Polyester strap with snap buttons and buckle

Advantage - RTG: 10e7-10e9 ohm, autoclavable, sterilization compatible, gamma radiation compatible, slip resistance, oil & chemical resistance, high washing temperature, soft and flexible.



M04-A-002 (NHB-370)

PHS-110F

Size	XS, S, M, L, XL, 2XL, 3XL
------	---------------------------

2 Footwear

• Static Dissipative Hypalon Soles



M11-A-002 (PHS-110F)

Size	XS	S	M	L	XL	2XL	3XL
Length X Width (mm)	245 X 100	265 X 108	290 X 118	315 X 128	340 X 138	365 X 148	390 X 158
Weight (g/pr) ± 5%	220	255	320	365	410	465	530

Material - Chlorosulfonated Polyethylene(CSM), natural rubber, conductive compound

Advantage - RTG: 10e7-10e9 ohm, autoclavable, sterilization compatible, clean room applicable, high washing temperature, gamma radiation compatible, slip resistance.



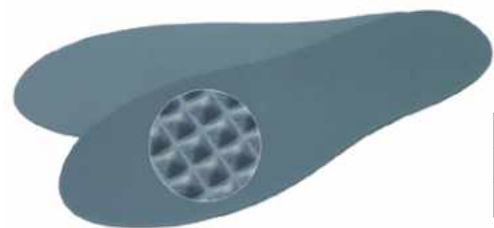
M11-A-003 (PHS-120P)

Size	XS	S	M	L	XL	2XL	3XL
Length X Width (mm)	-	265 X 108	290 X 118	315 X 128	340 X 138	365 X 148	390 X 158
Weight (g/pr) ± 5%	-	255	320	365	410	465	530

Material - Chlorosulfonated Polyethylene(CSM), Natural Rubber, Conductive Compound

Advantage - RTG: 10e7-10e9 ohm, Autoclavable, Sterilization Compatible, Clean Room Applicable, High Washing Temperature, Gamma Radiation Compatible, Slip Resistance.

• Static Dissipative Flat Soles



M11-A-004 (PRS-130E)

Size	XS	S	M	L	XL	2XL	3XL
Length X Width (mm)	278 X 117	298 X 120	317 X 125	330 X 132	348 X 135	357 X 140	370 X 147
Weight (g/pr) ± 5%	148	156	180	194	236	256	260

Material - Synthetic rubber(NBR-35L), Natural rubber, Conductive Compound

Advantage - RTG: 10e8-10e9 ohm, Autoclavable, Sterilization Compatible, Clean Room Applicable, High Washing Temperature, Gamma Radiation Compatible, Soft & Flexible, Light Weight, Slip Resistance.

2 Footwear

• Conductive Grey Soles



M11-A-001 (SUO-442)

Material - PVC, Conductive compound
Advantage - RTG: 10e4-10e6 ohm, extremely low s/generation, economical type, slip resistance

Size	XS	S	M	L	XL	2XL	3XL
Length X Width (mm)	260 X 108	290 X 110	310 X 118	330 X 128	350 X 133	-	-
Weight (g/pr) ± 5%	270	330	370	400	410	-	-

• Conductive NBR Soles



M11-A-006 (PRS-140C)

Size	XS	S	M	L	XL	2XL	3XL
Length X Width (mm)	245 X 100	265 X 108	290 X 118	315 X 128	340 X 138	365 X 148	390 X 158
Weight (g/pr) ± 5%	220	255	320	365	410	465	530

Material - Synthetic rubber(NBR-35L), natural rubber,conductive compound
Advantage - RTG: 10e6-10e7 ohm, autoclavable, sterilization compatible, clean room applicable, high washing temperature, gamma radiation compatible, silicone & phthalate free, slip resistance.

2 Footwear

• Autoclavable Footwear

- Resistant to repeated autoclave procedures
- Widely used in all kinds of working environment where sterilization is needed
- Dust generated by abrasion can be minimized by using specially treated polyester lining
- Anti-slip and easy to wear
- Cleanroom Shoes / Boots withstand high temperature and high pressure sterilization(at 121 °C Autoclave for 15 min.)



M15-A-004



M15-A-005

Ideal for general operation in controlled environment

Material : Special compound rubber / Polyester lining / Polyester leggings (option)



M23-A-002

Steel toe cap

Ideal for handling heavy products in controlled environment

Material - Special compound rubber / Polyester lining / Steel toe cap / Polyester leggings (option)

Size

230, 240, 250, 260, 270, 280, 290 (mm)

2 Footwear

• Safety Rubber Boots Series Chemical Resistant Safety Boots



M17-A-001

- Resistant to 15 chemical materials
- Material: Natural rubber + Hypalon
- Steel toe cap
- S/R 10e6 - 10e8 ohm(ESD Type)



M17-A-002

ESD Type

Chemical	CAS Registry Number
Acetone	67-64-1
Dichloromethane	75-09-2
Toluene	108-88-3
Diethylamine	109-98-7
Tetrahydrofuran	109-99-9
Ethyl Acetate	141-78-6
N-Hexane	110-54-3
Sodium Hydroxide 40%	1310-73-2
Sulfuric Acid 96%	7664-93-9
Nitric Acid (65±3)%	7697-37-2
Acetic Acid (99±1)%	64-19-7
Ammonia Solution (25±1)%	1336-21-6
Hydrogen Peroxide (30±)%	124-43-6
Isopropanol	67-60-0
Sodium Hypochlorite (13±)%	7681-52-9

Acid Resistant Safety Boots



M18-A-001

Chemical
Acetone
Acetonitrile
Diethylamine
Ethyl Acetate
N-Hexane
Methanol
Toluene
Dimethylformamide
Phosphoric Acid
Sulfuric Acid 80%
Hydrochloric Acid 37%
Nitric Acid 60%

- Inorganic Acid resistance
- Material: Natural rubber + Hypalon
- Steel toe cap

Alkali Resistant Safety Boots



M19-A-001

Chemical
Sodium Hydroxide Solution 20%
Ammonia Solution 28%

- Strong alkali chemical resistance
- Material: Natural rubber + SBR
- Steel toe cap

Oil resistant Safety Boots



M20-A-001

- Material: Natural rubber + NBR
- Steel toe cap

General Safety Boots



M21-A-001

- Material: Natural rubber
- Steel toe cap

2 Footwear

• Non-slip Slippers



Non-Slip
(Oil&Water)



Upper: EVA
Sole: Rubber
Color: Pink, Grey
Size (Pink – 240, 250mm, Grey – 250, 260, 270, 280mm)
Non-slip sole(*COF: 0.48)

• ESD Non-slip Sandals



Anti-Static



Non-Slip
(Oil&Water)



Breatheable



Toe Hard-cap



Upper: EVA + ABS Toe Cap
Sole: Rubber
Color: White, Black
Size: 230mm~300mm(10mm interval)

Features

- Non-slip sole(COF: 0.44)
- Supper light weight(255g/piece, 260mm)
- ESD properties: $0.1\text{Mohm} < R < 10\text{Mohms}$
- Laboratory, Hospital, Kitchen, Semiconductor,
- Good chemical resistance
- Hard toe cap
- 3 ventilation holes

• Non-slip Rubber Shoes



Non-Slip
(Oil&Water)



Cook&Kichen

Upper: EVA
Sole: Rubber
Color: Black
Size: 250mm~300mm(10mm interval)

Features

- Non-slip sole(COF: 0.44)
- Supper light weight(218g/piece, 260mm)
- Good chemical resistance
- 4" heel cup

* COF : Coefficient of Friction

2 Footwear

• Insulative Safety Shoes

Upper: Natural Cowhide, Steel Toe Cap
Sole: Phylon & Rubber, Kevlar+Aramid
Color: Black
Sizes: 230~300mm(5mm interval)

Features

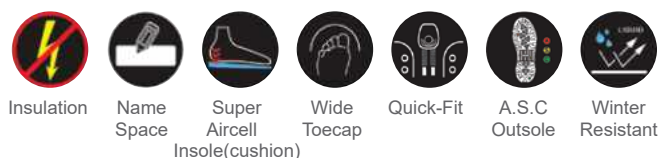
- Certificate No: 18-AV2CR-0311
- Insulation up to 14,000V
- Anti-Puncture middle soles
- Air Mesh Inner soles
- Dial lace adjuster



M13-Q-001



M13-Q-002



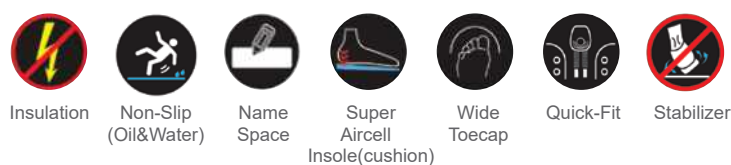
Upper: Natural Cowhide, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0172
- Insulation up to 14,000V
- Sandwich Mesh Inner cover
- ASC special outsole
- Reinforced heel parts
- Anti-Puncture middle soles
- Lace adjuster



M13-Q-003



Upper: Natural Cowhide, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0147
- Insulation up to 14,000V
- Sandwich Mesh Inner cover
- ASC special outsole
- Reinforced heel parts
- Anti-Puncture middle soles
- Ankle stabilizer
- Lace adjuster

2 Footwear



M13-Q-004



Insulation

Non-Slip
(Oil&Water)Wide
ToecapSuper
Aircell
Insole(cushion)

Dial Lock



Stabilizer

Upper: Synthetic & Cordura Mesh
Sole: Phylon & Rubber, Kevlar+Aramid
Color: Grey
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0146
- Insulation up to 14,000V
- Non-slip sole(COF: 0.25)
- Cordura double mesh
- Nanotex waterproof fabric
- Anti-Puncture middle soles
- Ankle stabilizer
- Dial lace adjuster



M13-Q-005

Upper: Artificiality Nubuck & Cordura Mesh, Steel Toe Cap
Sole: Phylon & Rubber
Color: Grey
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0347
- Insulation up to 14,000V
- Coefficient of Friction(sole): 0.25
- Cordura double mesh
- Nanotex waterproof fabric
- Anti-Puncture middle soles
- Ankle stabilizer
- Dial lace adjuster



Insulation

Non-Slip
(Oil&Water)Wide
ToecapSuper
Aircell
Insole(cushion)

Dial Lock



Stabilizer

• ESD Non-slip Safety Shoes



M14-Q-001



Anti-Static

Non-Slip
(Oil&Water)Name
SpaceVentilation
(In&Out)Super
Anti-static
Insole(cushion)3M
ReflectionWide
Toecap

Upper: Synthetic & Sandwich Mesh, Steel Toe Cap
Sole: Phylon & Rubber
Color: Grey
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0203
- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Lace adjuster

2 Footwear

Upper: Synthetic material, ABS Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

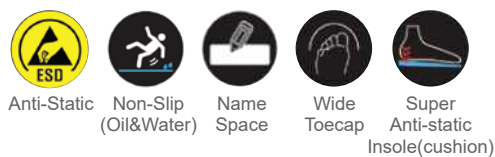
- Certificate No: 18-AV2CR-0247
- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Lace adjuster
- Air mesh upper sole



M14-Q-002



M14-Q-003



Upper: Synthetic & Sandwich Mesh, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Dual Velcro



M14-Q-004



Upper: Natural Cowhide & Synthetic material, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0286
- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Dual Velcro

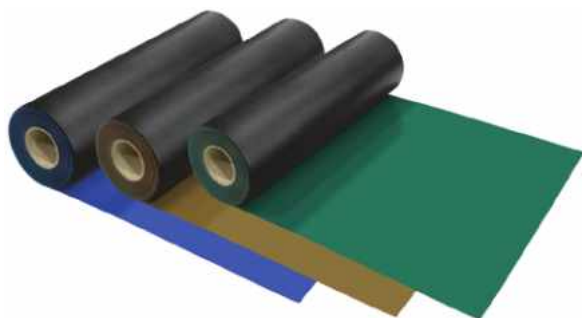
3 Mats & Tiles

How to make ESD safe work surface? Polstar ESD Control Table Mat is on the basic line of this question. Polstar ESD Control Table Mat has two co-extruded layer constructions, and these two layers are strongly stuck together and become homogenous body.

Thanks to its stable quality and stable surface resistance, our ESD Control Table Mat is commonly used as the top material of assembly lines, worktable, etc. in electronics and semiconductor factories and many other static controlled areas.

• ESD Control Table Mat

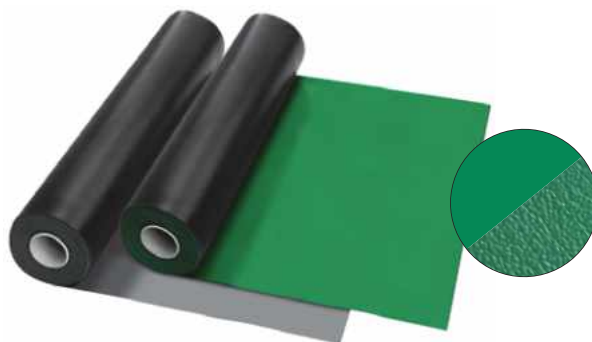
- ① Standard: M11-M-000
- ② Low SR Type: M29-M-000
- ③ With Bottom Adhesive: M25-M-000



M11-M-000

Thickness: 1.5mm, 1.8mm, 2mm, 3mm
Width: 60cm~120cm
Length: 10m / roll
Top: $10e8 \sim 10e9$ ohm (Standard)
 $10e7 \sim 10e8$ ohm (Low SR)
Bottom: $10e3 \sim 10e5$ ohm

• ESD Control PVC Mat



M18-M-000

Thickness: 1.6mm
Widths: 60cm~120cm
Top: $\leq 10e9$ ohm
Bottom: $\leq 10e6$ ohm

Features

- Smooth dull surface, embossed dull surface
- Thicker color layer(color: 0.8mm / bottom: 0.8mm)
- No smelling
- No curl on the edge of the mat

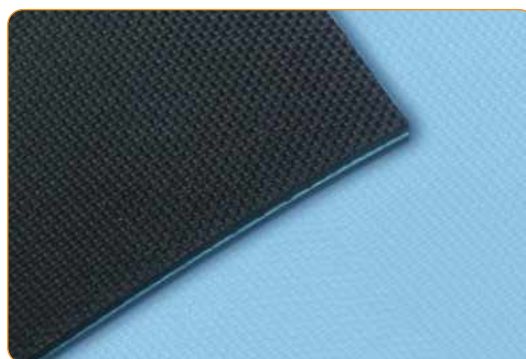
• Conductive Black Mat



M13-M-000

Homogenous black rubber
SR: $10e3 \sim 10e5$ ohm
Thickness: 1.3, 1.5, 2, 3mm
Width: 60cm~120cm
Length: 10m / roll

• Embossed ESD Rubber



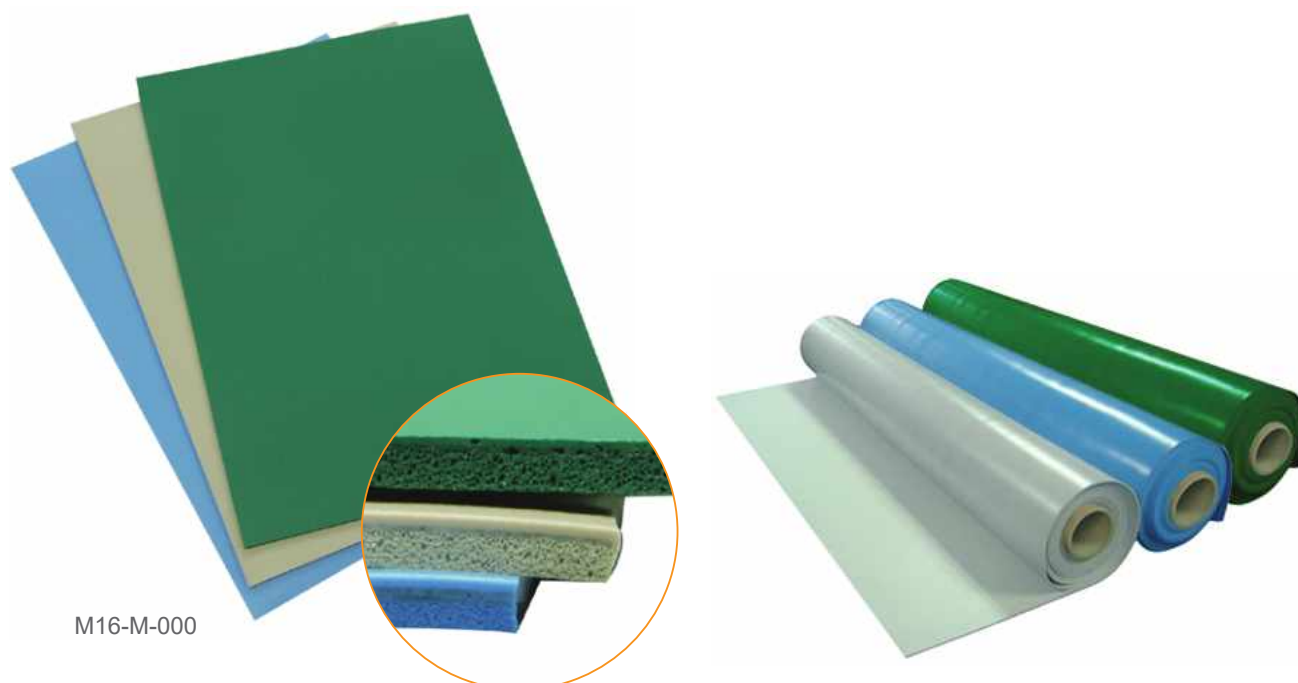
M14-M-000

- 1) Top & Bottom: embossed surface
- 2) Top & Bottom: embossed with inside texture
- 3) Top: normal surface, Bottom: embossed surface

Thickness: 1.8mm
Length: 10m / roll
Top: $10e8 \sim 10e9$ ohm
Bottom: $10e3 \sim 10e5$ ohm

3 Mats & Tiles

• 3 Layer Static Dissipative Mat



M16-M-000

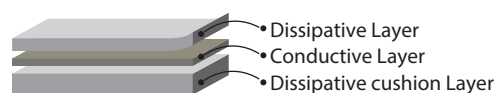
41 Mats & Tiles

The 3 layer Static Dissipative Mat consists of smooth top, cushioning bottom dissipative vinyl layer and conductive grid mesh inner layer, which provides fast discharge path to ground and energy absorption of components susceptible to physical shock by its unique structure.

Features

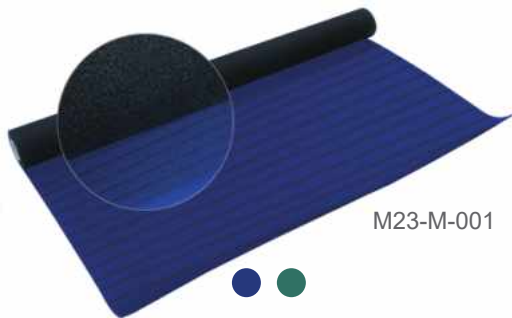
- Smooth surface
- Light weight provides easy installation on workstations
- Easy to pick up small components on the mat
- Excellent electrical properties and performance
- Carbon free constructions
- Easy cleaning with soap and water without affecting its static dissipative properties

Material	PVC + conductive grid mesh + foamed PVC	
Thickness	mm	3 ± 5%
Width	Inch, cm	24", 36", 48", 90cm, 100cm, 120cm
Length	m	10, 15
Color	Light Blue, Grey, Green	
RTG	Ω	$\leq 10e9$
RTT	Ω	$\leq 10e9$
Heat Resistance	$^{\circ}\text{C}$	Max 90



3 Mats & Tiles

• ESD Microfiber EVA Mat



M23-M-001



- ESD Microfiber fabric(4mm stripe)
- Conductive EVA foam

Thickness: 2.5mm
 Size: 0.96m x 9.5m
 SR: top- $10e6 \pm 1$ ohm, bottom - $10e5 \pm 1$ ohm
 Color: Dark Navy Blue
 Packing: 4rolls/carton, 27.20kgs/carton
 (ctn size: 360mm x 360mm x 1118mm)

• ESD Microfiber EVA Mat with Adhesive



M23-M-002



- ESD Microfiber fabric(4mm stripe)
- Conductive EVA foam
- Acrylic adhesive
- Releasing paper

Thickness: 2.7mm
 Size: 0.96m x 9.5m
 SR: top- $10e6 \pm 1$ ohm, bottom - $10e5 \pm 1$ ohm
 Color: Dark Navy Blue
 Packing: 4rolls/carton, 37.20kgs/carton
 (ctn size: 400mm x 400mm x 1118mm)

Application

- Tabletop of assembly lines for sensitive electronic parts.

Frictional coefficient

- 0.754 (KS M ISO 8295: 2006) - Static friction
- 0.684 (KS M ISO 8295: 2006) - Dynamic friction

Hardness : 41 (KS M 6518: 2006, Type A)

Features

- Smooth, soft and anti-scratch surface
- Cushion for easy grip
- Good ESD properties
- Light weight
- Easy installation with bottom adhesive treatment (M23-M-002)



• ESD Microfiber Mat with Adhesive



M23-M-003



- ESD Microfiber fabric(4mm stripe)
- Conductive Non-woven fabric
- Acrylic adhesive
- Releasing paper

Thickness: 0.9mm
 Size: 0.7m x 10m
 SR: top- $10e6 \pm 1$ ohm, bottom - $10e5 \pm 1$ ohm
 Color: Dark Navy Blue
 Packing: 4rolls/carton, 18.3kgs/carton
 (ctn size: 317mm x 317mm x 715mm)

• ESD Microfiber Fabric with Adhesive



M32-M-000



- ESD Microfiber fabric(4mm stripe)
- Acrylic adhesive
- Releasing paper

Thickness: 0.7mm
 Size: 1.37m x 23~37m
 SR: top- $10e6 \pm 1$ ohm, bottom - $10e5 \pm 1$ ohm
 Color: Dark Navy Blue
 Packing: 4rolls/carton, 18.3kgs/carton
 (ctn size: 317mm x 317mm x 1620mm)

3 Mats & Tiles

• ESD Microfiber EVA Pad



M26-M-001 (320mm x 240mm)
M26-M-002 (220mm x 170mm)



- ESD Microfiber EVA Mat
- Foam board(5T)
- ESD Microfiber EVA Mat

Application

- Mini worktable for assembling small devices, which are sensitive for ESD.

Features

- Soft and smooth surfaces
- Anti-scratch and ESD safe surface
- Use both top and bottom surfaces
- Custom size available

Thickness: 10mm

Size: 320mm x 240mm / 220mm x 170mm

Material: ESD Microfiber EVA Mat on top and bottom,
Foam Board(5T), ESD Microfiber Tape

SR: 10e6 +/- 1 ohm

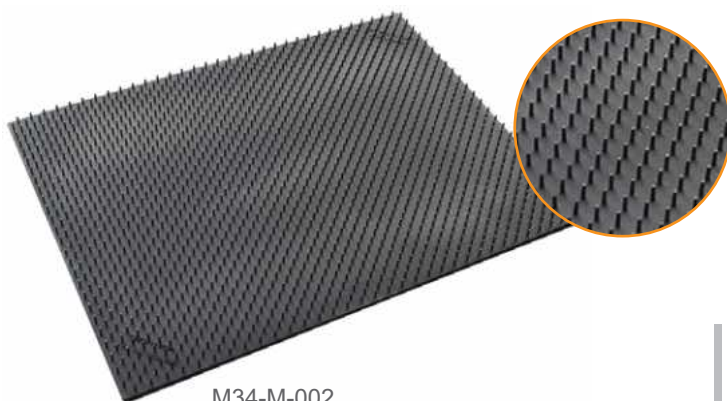
Color: Dark Navy Blue

Frictional coefficient

- 0.754 (KS M ISO 8295: 2006) - Statical friction
- 0.684 (KS M ISO 8295: 2006) - Dynamic friction

Hardness : 41 (KS M 6518: 2006, Type A)

• ESD Pin Mat



M34-M-002

Size: 11mm x 300mm x 400mm

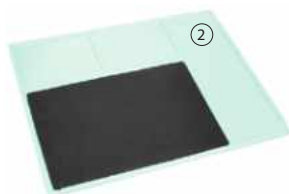
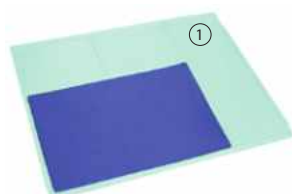
SR: 10e5~10e8 ohm (top)

Material: Silicon

• ESD Repair Mat



M35-M-001



Size: 7mm x 320mm x 410mm

SR: 10e7~10e8 ohm (top) / 10e4~10e5 ohm (bottom)

Material: NBR

Options

- ① ESD Microfiber Mat(0.9mm x 189mm x 287mm)
- ② ESD Silicon Mat(2.3mm x 189mm x 285mm)

3 Mats & Tiles

• ESD Microfiber mat



M23-M-005

Size: 1.4mm x 300mm x 400mm
 SR: 10e6-10e7 ohm (top) / 10e4~10e5 ohm (bottom)
 Material: Microfiber fabric + conductive rubber

• ESD Silicon Mat



M36-M-001

Size: 2.3mm x 300mm x 420mm
 SR: 10e5~10e8 ohm (top)
 Material: Silicon

• ESD Edge Protector



Material: foamed rubber
 SR: 10e8~10e9 ohm
 Application: edge protection for tables

- ① 15mm x 15mm x 100m(roll)
- ② 15mm x 38mm x 50m(roll)

• ESD Edge Protector



Material: rubber
 SR: 10e4~10e5 ohm
 Application: edge protection for sheets

- ③ 10mm x 2.5mm x 100m(roll)
- ④ 15mm x 5mm x 100m(roll)
- ⑤ 15mm x 9mm x 100m(roll)

• ESD Antifatigue Mats

Polstar ESD Antifatigue Mats are suitable for assembly lines and other workplaces, where long-standing jobs are frequently required, to reduce workers' fatigue from their jobs. Round shape rugged surface provides a finger-pressure therapy effect on feet, and the formed smooth materials used make physical workers comfortable by helping to release the stress of the workers.

Specially designed and constructed ESD antifatigue mats not only have a good function to relieve the stress of feet and legs, but also give a quick pathway for the static electricity charged in human body to the ground.

There are 8 different types of ESD antifatigue mats and 1 type of ESD antifatigue mat in Roll in our range. This classification was done by the materials used.

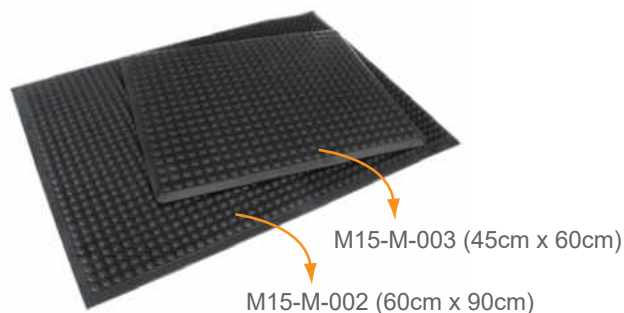
Type A & E are made of conductive Nitrile-Butadiene Rubber(NBR) and soft Polyurethane(PU) sponge, Type C, D & K are made of 100% Conductive or Static Dissipative NBR, Type N is made of 100% PU material, Type H & T are made of 100% foamed rubber and ESD antifatigue mat in Roll is made of foamed polyvinyl chloride(PVC).

On the other hand, our ESD antifatigue mats can be classified as a normal edge shape, an interlocking design and ESD antifatigue mat in Roll by their shapes. The normal edge shape is suitable for an individual worker while the interlocking design and the ESD antifatigue mat in Roll are ideal for a wide area, where a certain whole place is required as "Antifatigue Zone".

The ESD antifatigue mats are also classified into 2 types by their ESD properties. Type A, E, C, D & K(M15-M-022) have conductive readings whereas Type N, H, I, K(M15-M-021) & ESD antifatigue mat in Roll have static dissipative readings.

3 Mats & Tiles

Type A



Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
Conductive NBR + High Elastic PU Foam	Black	3.4kgs	16mm	60cm x 90cm	10e5 ~ 10e6
		2.1kgs		45cm x 60cm	

Type E



M15-M-011(60cm x 90cm)
M15-M-012(45cm x 60cm)

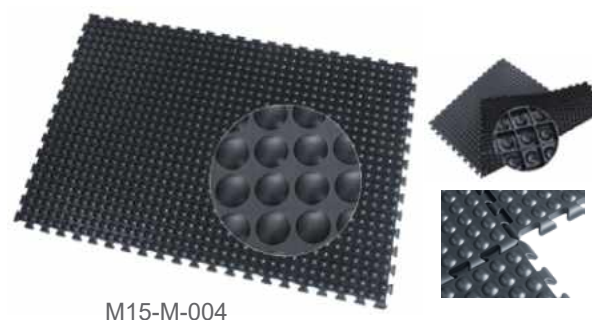
Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
Conductive NBR + High Elastic PU Foam	Black	3.4kgs	16mm	60cm x 90cm	10e5 ~ 10e6
		2.1kgs		45cm x 60cm	

Type C



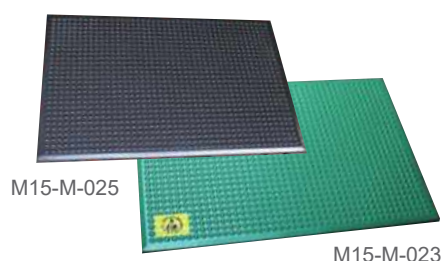
Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
Conductive NBR	Black	3.5kgs	16mm	60cm x 90cm	10e5 ~ 10e6

Type D



Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
Conductive NBR	Black	2.7kgs	16mm	60cm x 90cm	10e5 ~ 10e6

Type N



Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
Polyurethane	DK Brown	2.5kgs	15mm	60cm x 90cm	10e8 ~ 10e9
	Green				

Type K



Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
NBR	Grey	2.3kgs	15mm	45cm x 60cm	10e7 ~ 10e9
	Black				10e5 ~ 10e6

3 Mats & Tiles

Type H



M15-M-015

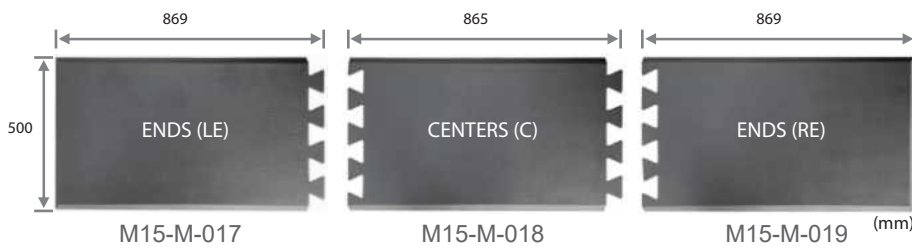
Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
Foamed rubber	Black	1.6kgs	17mm	60cm x 90cm	10e6 ~ 10e9

M15-M-014 500 x 900 mm (20"x36")

M15-M-015 600 x 900 mm (24"x35")

M15-M-016 900 x 1500 mm (35"x55")

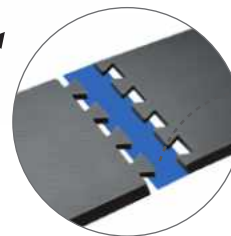
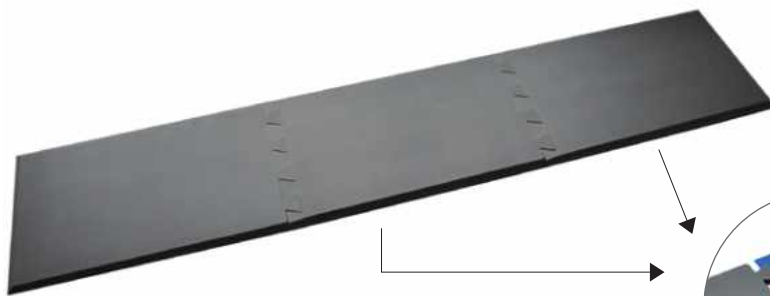
Type T



M15-M-017

M15-M-018

M15-M-019 (mm)



Sticky Pad
(Size: 120mm x 480mm)

Material	Color	Weight/mat	Thickness	Size/mat	Electrical S/Resistance
Polyurethane	Black	1.3kgs	17mm	50cm x 86.9cm	10e6 ~ 10e9
				50cm x 86.5cm	
				50cm x 86.9cm	

ESD Antifatigue Mat in Roll



M30-M-002 (Brown)
M30-M-012 (Grey)



Material	Color	Weight/roll	Thickness	Size/mat	Electrical S/Resistance
Foamed PVC	Brown	35kgs	8mm	1m x 10m	10e8 ~ 10e9
	Grey				

3 Mats & Tiles

• Conductive/Dissipative Tiles

Conductive & Static Dissipative Vinyl Flooring Tiles are the best solution for ESD protected floor, which will reduce static build up on people and materials. The Tiles are directly installed on the ground floor and they are also commonly used as the finishing material of Raised (Access) Floor System.

The electrical properties are permanent and they are not affected by ambient humidity. High contents of poly vinyl and high-pressure manufacturing process provide excellent indentation, wear and chemical resistances.



HK-1101



HK-1103



HK-1203



HK-1100



HK-1102



HK-1104



HK-1106



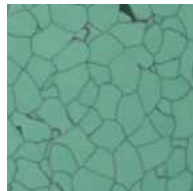
HK-1107



HK-1108



HK-1109



HK-2205



HK-2206



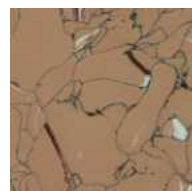
PLE-006



PLE-001



PLE-002



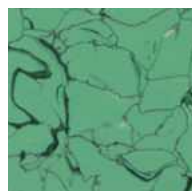
PLE-003



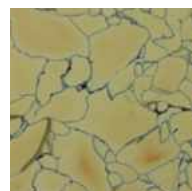
PLE-004



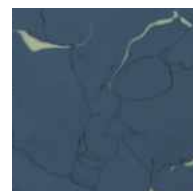
PLE-007



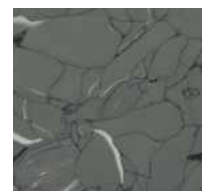
PLE-005



PLE-008



PLE-009



PLE-010



Homogeneous Resilient Structure

Thickness: 2mm, 3mm
 Size: 600x600, 610x610, 900x900 in mm
 SR: 2.5x10e4~1 x 10e6 ohm (conductive)
 10e6~10e8 ohm (static dissipative)

3 Mats & Tiles

● Installation Accessories

Conductive Adhesive

- ① Carbon Fiber Type (M10-M-001)
- ② Carbon Powder Type (M10-M-002)
- ③ 2 Parts Epoxy (M10-M-003)
- ④ PU Epoxy (M10-M-004)

Copper Tape



Size: 0.038mm(T) X 10mm (W)
Packing: 30m/roll

Welding Rod

M06-M-001	
M06-M-002	
M06-M-003	
M06-M-004	
M06-M-005	
M06-M-006	
M06-M-007	
M06-M-008	
M06-M-009	
M06-M-010	

Brief Installation Instructions

1. Preparation of Subfloor

- 1) Flatness
 - Maximum variation of the subfloor allowable is 3.0mm in 3 meter square.
- 2) Humidity of concrete subfloor
 - Under 5.0LBS per 1,000sqft in 24 hours by Calcium Chloride Moisture Test in accordance with ASTM E 1907/ASTM F 1869.
 - Under 2.5% measured with CM Hygrometer(without floor heating)
- 3) PH Level
 - Under 10
- 4) Smoothness and Surface
 - Subfloor must be clean, dry and free from dust and dirt.
 - Cracks and irregular surface must be patched and leveled, using a good grade of the floor finishing materials, like smoothing compound, etc.
- 5) Prior to installation, the flooring tiles should be acclimated for at least 48 hours.
- 6) Recommendable temperature will be at 20℃.(At least from 18℃ to 30℃) and constant temperature should be maintained during and after the installation for at least 48 hours.

2. Conductive Adhesive

Suitable adhesive should be consulted and selected by authorized personnel, who manage the job site conditions, from the following selections:

- Carbon Fiber Type: Water based fiber mixed Conductive acryl adhesive
- Carbon Powder Type: Water based carbon mixed Conductive acryl adhesive
- 2 Parts Epoxy: 2 component environment friendly conductive epoxy adhesive
- PU Epoxy: Solvent based Conductive Urethane Rubber Adhesive

The recommended quantity of adhesive is 0.25kg / sqmt.

3. Copper Tape

- Install the Copper Tape according to the interval standard of floor electric resistance requirements(ConductiveTile: 3m, Static Dissipative: 6~8m in cross section)
- Crossing points of Copper Tape lines should be punched in 3 mm diameter to secure the connection.
- Final grounding connection to the grounding points must be performed by authorized electrician or engineer.

4. Welding

- Seamless floor covering can be applied to prevent moisture troubles and to reduce dust and particles rising from the floors.
- Make the groove around 70~80% depth comparing to the original thickness of the tiles using electric grooving or hand grooving tools
- Trim off the excess parts of welding rod with the crescent -shape knife after the welding.

3 Mats & Tiles

• Composition Deluxe Tile



M20-M-002 (891)



M20-M-008 (890)



M20-M-001 (898)



M20-M-006 (895)



M20-M-012 (897)



M20-M-003 (886)



M20-M-007 (885)



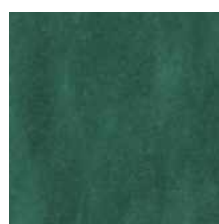
M20-M-013 (04)



M20-M-004 (883)



M20-M-009 (887)



M20-M-014 (07)



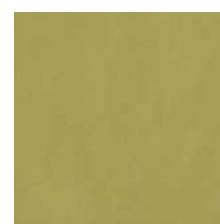
M20-M-017 (916)



M20-M-005 (910)



M20-M-011 (912)



M20-M-015 (11)



M20-M-018 (917)



• Composition PVC

* The color shade may vary slightly in each production LOT.

Features

- The most economical vinyl floor covering material
- Homogeneous structure provides constant color pattern to the bottom end
- Easy maintenance and high durability
- Excellent abrasion resistance
- Flame retardant

Main Applications

- Office Building (Hall, Lobby, Corridor, Lift, Office area, Stair, Warehouse, etc.)
- Hospital (Corridor, Office area, etc.)
- School (Hall, Lobby, Corridor, Lift, Class Room, Restaurant, etc.)
- Shopping mall (Hall, Lobby, Corridor, Lift, Warehouse, etc.)
- Hotel (Corridor, Lift, etc.)
- Apartment (Corridor, Entrance, etc.)

4 Cleanroom Furniture

• Shoes Rack

Door Type



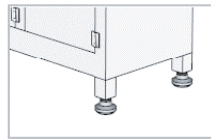
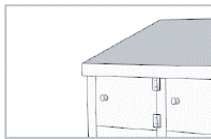
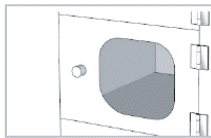
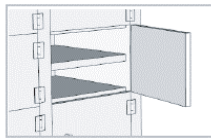
M03-N-008

Open Type



M03-N-004

For 10/16/20/36 persons



(mm)			
Type	Item Code	Capacity	Size
Door Type	M03-N-005	10 people	700 x 350 x 1100(H)
	M03-N-006	15 people	1000 x 350 x 1100(H)
	M03-N-007	20 people	1300 x 350 x 1100(H)
	M03-N-008	36 people	1300 x 350 x 1850(H)
Open Type	M03-N-001	10 people	700 x 350 x 1100(H)
	M03-N-002	15 people	1000 x 350 x 1100(H)
	M03-N-003	20 people	1300 x 350 x 1100(H)
	M03-N-004	36 people	1300 x 350 x 1850(H)

• Smock Rack

Door Type



M01-N-003

Open Type



M01-N-003

Single Tear Type



M01-N-005

Double Tear Type



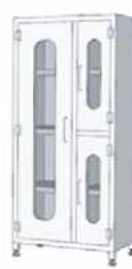
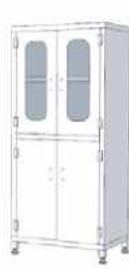
M01-N-007

(mm)			
Type	Item Code	Capacity	Size
Door Type	M01-N-003	-	1000 x 500 x 2000(H)
	M01-N-004	-	1200 x 500 x 2000(H)
Open Type	M01-N-001	-	1000 x 500 x 2000(H)
	M01-N-002	-	1200 x 500 x 2000(H)
Single tear door type	M01-N-005	3 people	900 x 500 x 1800(H)
	M01-N-006	4 people	1200 x 500 x 1800(H)
Double tear door type	M01-N-007	6 people	900 x 500 x 1800(H)
	M01-N-008	8 people	1200 x 500 x 1800(H)

Features

- All products are made of austenitic stainless steel grades, 304 and 316L, which are suitable for any cleanroom environment.
- All products are specifically designed for cleanroom environment.
- Able to provide all custom-made products used in smock rooms or cleanrooms.
- Chemical resistant and HACCP certified products are available.

• Cabinet



Unit: mm

Item Code	Size
M02-N-001	800 x 500 x 1800(H)
M02-N-002	800 x 500 x 1800(H)

Features

- Custom-made products are available on request.

4 Cleanroom Furniture

• Disposable Cabinet



M06-N-001



M06-N-002



M06-N-003

(mm)		
Item Code	Type	Size
M06-N-001	Store tank 1 + Dispose tray 1	900 x 500 x 1050(H)
M06-N-002	Store tank 2 + Dispose tray 1	1200 x 500 x 1050(H)
M06-N-003	Store tank 2 + Dispose tray 2	1800 x 500 x 1050(H)

Features

- For store and dispose of personal hygiene equipment such as gloves and masks.

• Worktable



(mm)		
No.	Item Code	Size
1	M04-N-001	1200 x 600 x 750(H)
2	M04-N-002	1200 x 600 x 750(H)
3	M04-N-003	1200 x 600 x 750(H)
4	M04-N-004	1200 x 600 x 750(H)
5	M04-N-005	1200 x 600 x 750(H)

Features

- Custom-made products are available on request.

• Gowning Rack



M05-N-001

Size: 1800mm x 500mm x 2000mm(H)

Features

- Suitable to store large amount of cleanroom garment.

• Cleanroom Chair



M08-N-001

Size: 350Φ x 450mm(H)

Features

- Adding wheels are available.
- Can be used in various sterile environment.

4 Cleanroom Furniture

Cart



M07-N-001



M07-N-002

Features

- Used in semiconductor, hospital, food processing industries, etc.

(mm)	
Item Code	Size
M07-N-001	900 x 600 x 850(H)
M07-N-002	800 x 500 x 900(H)

Waste Bin



M09-N-002

(mm)	
Item Code	Size
M09-N-002	300Φ x 500H
M09-N-003	270Φ x 350H
M09-N-004	220Φ x 300H

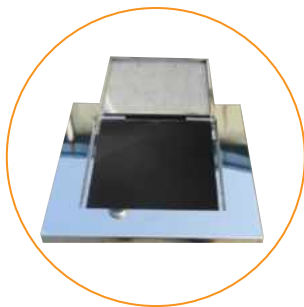


M09-N-009

(mm)	
Item Code	Size
M09-N-006	300Φ x 700H
M09-N-007	270Φ x 700H
M09-N-008	230Φ x 650H
M09-N-009	230Φ x 550H



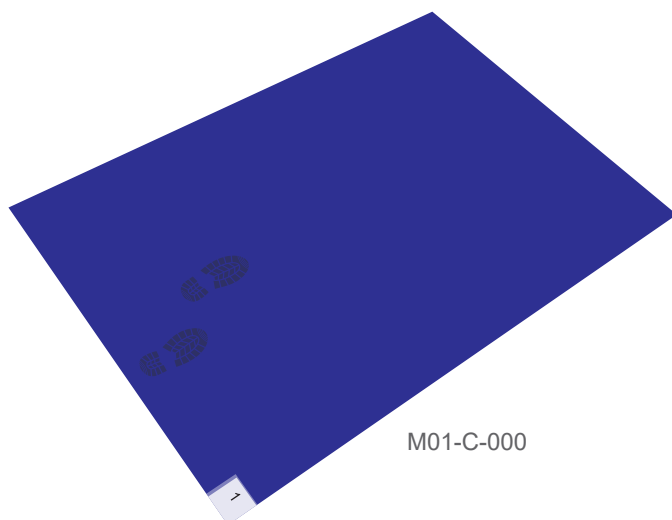
M09-N-001
Size: 400mm x 400mm x 800mm(H)



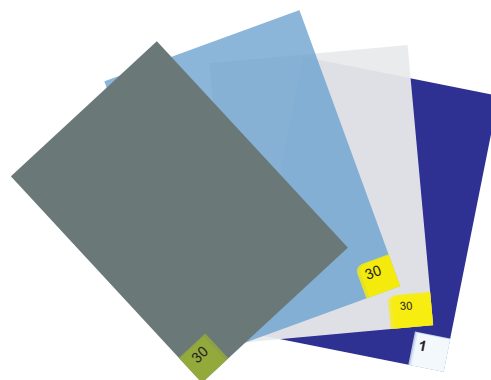
5 Clean Products

Clean Products consist of several types of products, such as Sticky Mat, Sticky Roller, Protection Film, DCR-Pad, Silicone Rubber Roller, Cleanroom Mop System, Swabs, etc. All these items are related with cleaning dust or particles and keeping sensitive parts, components and finished products clean by controlling all kinds of contaminations.

• Sticky Mat



M01-C-000



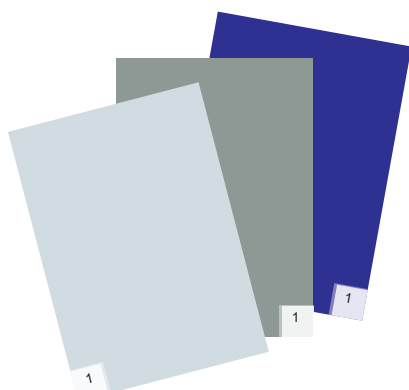
Size: 18" x 36", 18" x 45", 24" x 36", 26" x 45", etc.
Color: Blue, Grey, White, Light green, Clear
Packing: 30sheets or 60sheets/mat, 4mats, 8mats, 10mats/case, etc.

Features

- 99.80% of dust collection at several steps on the mats.
- Collected dust on the mats is not migrated.
- Comfortable walking and smooth passing of hand carts.
- Mat can be used with/without the frame.
- Adhesive level can be adjusted on request.
- Antimicrobial sticky mat is available for pharmaceutical, biological and medical areas.
- ESD sticky mat is available for static sensitive areas.
- Thin film sticky mat at economic price is another option.

Varieties

SM-SSM - Sticky mat (Standard)
SM-TNM - Thin film sticky mat
SM-ABM - Antimicrobial sticky mat
SM-EBM - ESD antimicrobial sticky mat
SM-ESM - ESD sticky mat



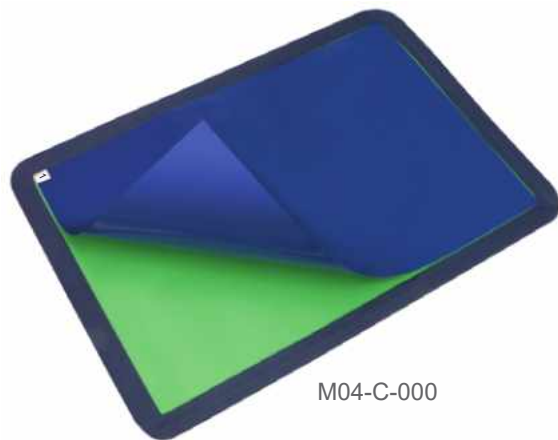
SM-SSM / SM-TNM / SM-ESM



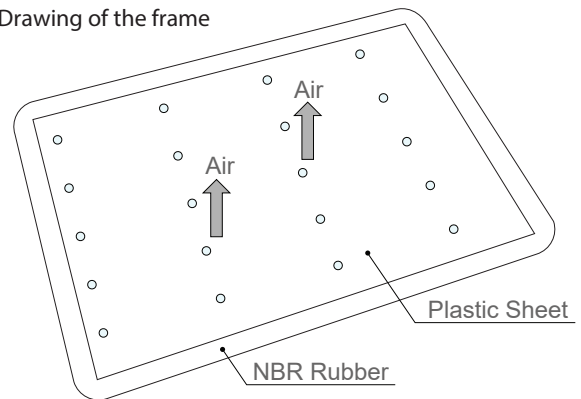
SM-ABM / SM-EBM

5 Clean Products

• Frame For Sticky Mat



Drawing of the frame

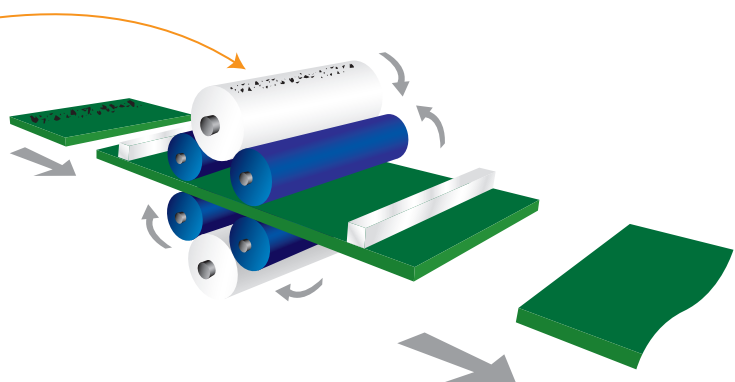


Size	600 X 900	600 X 1200	18" X 36"	18" X 45"	26" X 45"	24" X 36"
Thickness (mm)	ID : 1T					
	ED : 5T					
Width (mm)	ID : 605	ID : 605	ID : 462	ID : 462	ID : 665	ID : 615
	ED : 705	ED : 705	ED : 562	ED : 562	ED : 765	ED : 715
Length (mm)	ID : 905	ID : 1205	ID : 919	ID : 1148	ID : 1148	ID : 919
	ED : 1005	ED : 1305	ED : 1019	ED : 1248	ED : 1248	ED : 1019
Hole Size (Φ)	0.5					
Interval of each hole in cross section (mm)	50					
Carton Size (mm)	720 X 1020 X 12(H)	720 X 1320 X 12(H)	600 X 1020 X 12(H)	600 X 1270 X 12(H)	790 X 1270 X 12(H)	720 X 1020 X 12(H)
Quantity / Carton	1EA					
Weight / Carton	2.2 KG	3.2 KG	1.8 KG	2.7 KG	3.4 KG	2.5 KG

• PCB Cleaning Roll



Material: PP
Color: White
Size: 3" x 600mm x 20m or 25m



Normally, PCB Cleaning Roll goes with machine, not with a handle, and this roll is mainly designed for cleaning PCB. To clean the surface of PCB effectively, perfect flat conditions of the roll are essential. Several different adhesive levels are available for different applications.

5 Clean Products

• PE Sticky Roller & Antistatic PE Sticky Roller



M05-C-000



Color: Blue, White, Transparent
Size: 100, 150, 160, 200, 250, 300, 450, 500 mm, etc.
Length: 20m/roll
Core: 38mm, 76mm (3")

• Non-Woven Sticky Roller

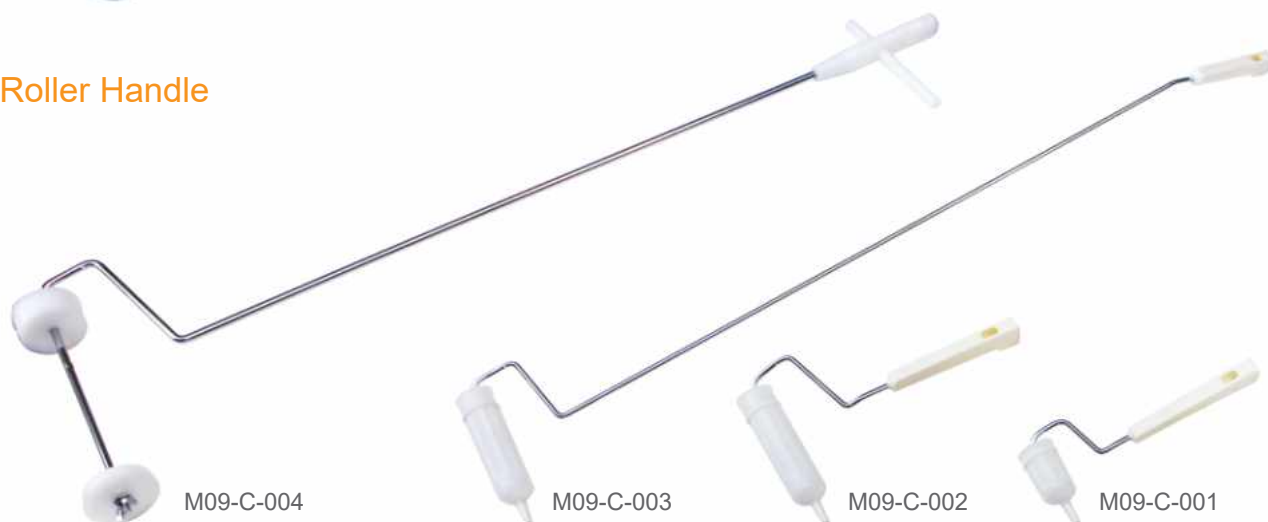


M07-C-000



Color: White
Size: 80, 160, 320 mm
Length: 10, 20m/roll
Core: 38mm, 76mm (3")

• Roller Handle



M09-C-004

M09-C-003

M09-C-002

M09-C-001

Item code	Descriptions			Size			Material		Packing
	Core dia.	Head	Length	Handle	Frame	Head			
M09-C-001	38mm	8cm	25cm	PP	Steel chrome (Cr) plating	PE			10 pcs/carton (1.4kgs/CTN) Size : 220 x 350x 220 mm(H)
M09-C-002	38mm	16cm	29cm	PP	Steel chrome (Cr) plating	PE			10 pcs/carton (1.7kgs/CTN) Size : 220 x 350x 220 mm(H)
M09-C-003	38mm	16cm	107cm	PP	Steel chrome (Cr) plating	PE			10 pcs/carton (4.5kgs/CTN) Size : 230 x 1100x 230 mm(H)
M09-C-004	76.2mm	32cm	120cm	PP	Steel chrome (Cr) plating	PE			5 pcs/carton

• ESD PET Adhesive Film



M13-C-000

Polstar-EWF is a good choice to make ESD surface economically by simply attaching high quality ESD treated adhesive film on the surface, like glass, acrylic, PC, etc. This film can also be used as a protection film for protecting the surfaces or devices from scratches during handlings, transportation, etc.

Features

- Good ESD properties on backing side.
- Semi-permanent ESD properties.
- No migration.
- Very low removal adhesive.



- ESD hard coated PET Film(50, 75, 100 μ m)
- Silicone Adhesive(20 μ m)
- Release Film (25 μ m)

Physical Properties

Properties		Unit	Value	Test Method
Film		-	ESD hard coated PET	
Adhesive		-	Silicone	
Thickness	Backing	μ m	50 $\pm$ 2, 75 $\pm$ 2, 100 $\pm$ 2	
	Adhesive		20 $\pm$ 3	
Color		-	Clear	
Adhesion		gf/25mm	20 $\pm$ 3	ASTM D 1000
Resistance	Adhesive	Ω /25mm	-	ASTM D 257
	Backing		Max. 10 ⁵⁻⁸	
Electrostatic Discharge		sec	Max. 0.1	
Size		mm, m	1000 ~ 1200mm X 100m, 200m	

How to apply the film on the surface effectively

1. Keep the surface free of dust, dirt, moisture, etc.
2. Measure the area where the film is applied and cut the film with extra 1-3 cm.
3. Prepare spray bottle with purity water mixing water-soluble detergent, like shampoo(8-10 drops of detergent for 1 liter water).
4. Spray the prepared water on the surface to make the surface wet and slippery.
3. Remove the releasing sheet from the film and also spray the water on the adhesive area of the film.
4. Attach the film on the surface from the center of the area and press the film out from the center to edge sides smoothly several times by using of a flat and soft scoop until the moisture and the air bubbles are completely removed.
6. Cut the film fitting in the surface perfectly.

- * Please do not press or wipe edge side strongly until the margin of the film is cut-off
- * Please do not use any kinds of chemicals and solvents for cleaning.
- * Use very soft wiper with water soluble detergent for surface cleaning.

5 Clean Products

• ESD PET Film



M22-C-000

Polstar ESD PET Film is suitable for PCB manufacturing assembly lines for PCB testing, and this film will also be used as a transparent copy film. Antistatic treatment on both surface gives semi-permanent ESD properties.

Thickness: 50/75/100 μ m
Width: 1000mm ~ 1250mm
Surface Resistance (both sides): 10e5~10e8 ohm



- Antistatic Treatment
- PET Film (50 μ m, 75 μ m, 100 μ m)
- Antistatic Treatment

• Protection Film



M10-C-000

Protection Film are widely used in various objects that need surface protection from outer impact, contaminations, scratches etc. They are used on stainless steel, AL sheet, acrylic sheet, powder coated steel, wooden flooring, PVC sheet and many others.

There are a number of variations in Protection Film. So it is always recommended to contact mecind@mecind.co.kr or person you know for more information.

Item	Material	Adhesive	Thickness(um)	Adhesive(g/25mm)	Width(mm)	Length(m)	Elongation(%)	Applications
Surface Protection Film	Polyethylene	Acrylic	40-150	30, 100, 200, 300 400, 500, 600, 700	100-1800	100-2000	over 250	PVC & Alumium & ABS Panel, Melanin board SUS Panel, Fabric Sheet
PE Protection Film	Polyethylene	Acrylic	0.050, 0.06, 0.070 0.080, 0.100, 0.150	10, 30, 50, 100, 300	100-1800	100-2000		Back Light, Touch Screen, LCD/PD Panel Optical, Film&Resin Plate
PE Protection Film (Silicone Adhesive)	Polyethylene	Silicone	50-250	1-3	100-1800	100-2000		Glass, Plastics, Touch Screen, Optical Film
PE Protection Film (Urethane Adhesive)	Polyethylene	Urethane	50, 60, 80, 150	10-30	100-1800	100-2000		Back Light Unit, LCD, PC, PMMA, Glass, Diffusion Film, Polarizing Film

Item	Material	Adhesive	Features	Thickness (um)	Peel Strength(mm)	Re-Adhesive Value(%)
PET Release Liner	Clear PET	Silicone	One-sided/Double-sided coating	22-188	1-180	80-97

Item	Thickness (um)	Tensile Strength (kg/cm ²)	Elongation(%)	Tear Strength (kg/cm)	Adhesive (g/25mm)	Application
EVA Protection Tape	50	300-350	450-600	110, 120, 130	30℃ - 15, 20, 30, 40 80℃ - 30, 40, 50 120℃ - 35, 45, 60	PC, PMMA, PET, PVC, ABS, Glossy surface steel, Plastic themal forming

Available Width: 1,600mm
Available Length: 200m ~ 3,000m

5 Clean Products

● Silicone Rubber Roller

Stick Type



Stick Type

Item code	Descriptions	Dia.(mm)	Width	Length
M15-C-001		5	-	120 mm

Handy Type



Handy Type

Item code	Descriptions	Dia.(mm)	Width	Length
M15-C-002		20	30 mm	90 mm
M15-C-003		25	50 mm	90 mm
M15-C-004		30	100 mm	150 mm
M15-C-005		30	150 mm	150 mm
M15-C-006		30	200 mm	150 mm
M15-C-007		30	250 mm	150 mm
M15-C-008		30	300 mm	150 mm

Floor Type



Floor Type

Item code	Descriptions	Dia.(mm)	Width	Length
M15-C-009		50	250 mm	1~2 m
M15-C-010		50	300 mm	1~2 m
M15-C-011		50	500 mm	1~2 m
M15-C-012		50	600 mm	1~2 m

Handy Type



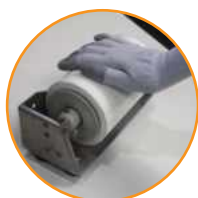
● Glove Cleaner

Wearing on and off the gloves every time you clean them is not the most efficient way to work with them. The Glove Cleaner, however, will make it significantly easy and time-saving. The workers can put their hands on the cleaner while wearing the gloves, and simply push or pull their hands as the cleaner does its job. The cleaner serves numbers of purposes in various manufacturing process, and it does not matter where you put the cleaner as long as it is close enough to the workers.



Features

- Stainless Steel Body offers great durability
- The nature of compact design makes it very mobile
- Can be mounted on either table or wall
- The adhesive rolls have cutting lines to make them easy to peel off
- Non-woven, PE and PP rollers are available



M30-C-001

Item	Non-woven Sticky Roll	PE Sticky Roll	PCB Cleaning Roll
Material	Non-woven	Polyethylene	PP Synthetic Paper
Core	3" PE Core, 155mm x 15m	3" PE Core, 150mm x 20m	3" PE/ABS Core, 155mm x 20m
Thickness	180 μ m	47 μ m	80 μ m
Adhesion	250~350g/25mm	400~500g/25mm	600~800g/25mm

5 Clean Products

• DCR-Pad



Features

- Use with reusable Rubber Rollers.
- Excellent cleaning guaranteed.
- Cost-effective.
- Variations available;
 - 1) DCR-Pad with full adhesive area (standard)
 - 2) BCR-Pad with adhesive free area
 - 3) Black colored DCR-Pad for better dust visibility

Adhesion (gf/25mm): $1,250 \pm 100$
 Thickness: Adhesive paper - 80um/sheet
 Release paper - 117um/sheet
 Total Thickness: 13.00mm/pad (50 sheets)
 Packing: 50 sheets/pad, 20pads/box

Size

- 1) 330mm x 240mm (Adhesive area: 330 x 180mm)
- 2) 165mm x 240mm (Adhesive area: 165 x 180mm)



- Release paper
- Adhesive
- Base paper



• Holder for DCR-Pad



Packing

- 1) 50 sheets/pad, 5 pads/inner box, 5 inner boxes/outer carton
- 2) 50 sheets/pad, 10 pads/inner box, 5 inner boxes/outer carton

Total weight: 860g, 430g/pad, 24.5 kgs/carton

5 Clean Products

• Cleanroom Foam Swab



M16-C-017



M16-C-018



M16-C-022



M16-C-023



M16-C-024



M16-C-025



M16-C-027

Item Code	Materials		Size		Packing
	Tip	Handle	Tip (W x L)	Total Length	
M16-C-017	PU	PP	3mm x 13mm	68mm	100pcs/bag, 40bags/l.box, 12i.bboxes/case
M16-C-018	PU	PP	4mm x 10mm	68mm	100pcs/bag, 40bags/l.box, 12i.bboxes/case
M16-C-022	PU	PP	5mm x 10mm	80mm	50pcs/bag, 25bags/l.box, 12i.bboxes/case
M16-C-023	PU	PP	15mm x 25mm	132mm	50pcs/bag, 10bags/l.box, 12i.bboxes/case
M16-C-024	PU	PP	11mm x 23mm	134mm	50pcs/bag, 10bags/l.box, 12i.bboxes/case
M16-C-025	PU	PP	11mm x 22mm	148mm	50pcs/bag, 10bags/l.box, 12i.bboxes/case
M16-C-027	PU	PP	6mm x 17mm	163mm	100pcs/bag, 10bags/l.box, 12i.bboxes/case

5 Clean Products



M16-C-028



M16-C-030



M16-C-031



M17-C-006



M17-C-007



M17-C-008



M17-C-009

Item Code	Materials		Size		Packing
	Tip	Handle	Tip (W x L)	Total Length	
M16-C-028	Knit Polyester	PP	3mm x 13mm	68mm	100pcs/bag, 40bags/l.box, 12i.bboxes/case
M16-C-030	Polyester	PP	3mm x 17mm	163mm	100pcs/bag, 10bags/l.box, 12i.bboxes/case
M16-C-031	Micro Denier Fabric with PP Tube	PP	8mm x 20mm	153mm	100pcs/bag, 10bags/l.box, 12i.bboxes/case
M17-C-006	PU	A/S PP	3mm x 13mm	68mm	100pcs/bag, 40bags/l.box, 12i.bboxes/case
M17-C-007	PU	Con. PP	11mm x 22mm	148mm	50pcs/bag, 10bags/l.box, 12i.bboxes/case
M17-C-008	PU	Con. PP	6mm x 17mm	163mm	100pcs/bag, 10bags/l.box, 12i.bboxes/case
M17-C-009	Knit Polyester	Con. PP	3mm x 13mm	68mm	100pcs/bag, 40bags/l.box, 12i.bboxes/case

● Cotton Swab



M18-C-001



M18-C-003



M18-C-004

Item Code	Materials		Size		Packing
	Tip	Handle	Tip (W x L)	Total Length	
M18-C-001	100% Cotton	Wood	2.5mm x 9mm	74mm	100pcs/bag, 50bags/l.box, 20i.bboxes/ctn
M18-C-003	100% Cotton	Wood	2.5mm x 12mm	79mm	100pcs/bag, 50bags/l.box, 20i.bboxes/ctn
M18-C-004	100% Cotton	Wood	2.5mm x 15mm	153mm	100pcs/bag, 12bags/l.box, 20i.bboxes/ctn

5 Clean Products

• Cleanroom Mop

Wet Mop



Item Code	Wet Mop Set (Mop + handle)	M19-C-001
	Wet Mop	M19-C-004
	Handle	M19-C-011
Size	Mop	16cm X 35cm
	Handle (L)	80cm~150cm (adjustable)
Material	Mop	100% Microfiber Polyester
	Handle	Polypropylene
	Pole	Aluminium

Flat Mop with Plastic Plate



M19-C-013

Item Code	Flat Mop Set (Mop + Handle)	M19-C-013
	Mop	M19-C-006
	Handle	M19-C-015
Size	Mop	12.5cm x 60cm
	Handle(L) - 60cm	125cm
Material	Mop	100% Microfiber Polyester
	Handle	Polypropylene
	Pole	Galvanized Steel

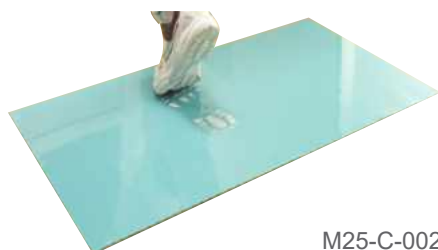
Flat Mop with SUS Plate



Item Code	Flat Mop Set (Mop + handle)	M19-C-003
	Flat Mop	M19-C-008
	Handle	M19-C-010
Size	Mop	12cm x 40cm
	Handle (L)	80~150cm(adjustable)
Material	Mop	100% Microfiber Polyester
	Handle	Polypropylene
	Pole	Stainless Steel

5 Clean Products

• Washable Sticky Mat



M25-C-002

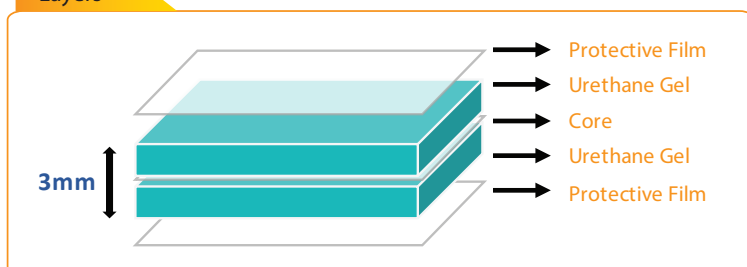
600 x 900mm (24" x 36")
3.0T



M25-C-003

600 x 1200mm (24" x 48")
3.0T

Layers



• Steam Cleaner



Features

- Convenient and effective mat cleaning.
- Can be used with/without detergent.
- Detergent, spray and squeegee are available.

• Paper Adhesive roll

The Paper Adhesive Roll is made of Eco-friendly water based adhesive and special paper materials. It is designed to remove particles on the sensitive surface primarily such as PCB board. To prevent static electricity generated when the roll is unrolled or removed from various objects, the adhesive and paper have an antistatic function. One of the remarkable feature is that the softness is much higher than PP and PE. Thus, it can apply to all of the uneven surfaces. Additionally, the special treatment paper helps to generate less particles when it torned.



Features

- Water based adhesive.
- Environment-friendly Products.
- Almost no dust.
- Anti-static function
- No adhesive residue



- Water based adhesive
- Specially processed paper
- Silicone

Item	Adhesive Material	Adhesive power	Thickness(mm)	Width(mm)	Length(m)	Sheet	Tensile strength(g/f)	Elongation(%)	Surface resistance	Core	
										Materials	Size(mm)
Paper Adhesive roll	Water based Adhesive	800 g/f (+/- 75g/f)	0.13	160, 180, 200, 600 750, 900, etc	20	38mm(core): 160 ± 15mm/sheet 72mm(core): 320 ± 15mm/sheet	600 (+/- 60g/f)	5	≤10e10	PE core	38, 76

6 Stationery

• Polstar Clean Paper



Polstar Clean Paper is specially designed for writing, printing and photo-copying machine in Cleanroom environment. Through polymerization process, fiber lint and particulates are tightly bound each other. This will decrease electro-static buildup and will eventually minimize scrap rate of copier. Polstar Clean Paper provides the variety of colors, sizes and weights.

Features

- Low Talc
- Recyclable
- Double packing in cleanroom environment
- Ultra-low particle generation, extractable chemicals and metallic ion content
- High opacity and durability
- High tear and tensile strength
- Smooth feeding and superior toner adherence in laser printers and PPC copiers
- Clear writing
- Various colors, sizes and weights are available

• Polstar Clean Paper (EC Type)

Newly developed Clean Paper to meet the requirement of price-oriented customers



Features

- Low Talc
- Recyclable
- Single packing in cleanroom environment
- Ultra-low particle generation, extractable chemicals and metallic ion content
- High opacity and durability
- High tear and tensile strength
- Smooth feeding and superior toner adherence in laser printers and PPC copiers
- Clear writing
- Various colors and sizes are available

• TF Clean Paper



Features

- Talc Free
- Recyclable
- Double packing in cleanroom environment
- Ultra-low particle generation, extractable chemicals and metallic ion content
- High opacity and durability
- High tear and tensile strength
- Smooth feeding and superior toner adherence in laser printers and PPC copiers
- Clear writing
- Colors: White, Light blue

6 Stationery

• Clean Roll Paper



M01-S-000

Recyclable
Various colors and weights are available
Core dia.: 2", 3"(76mm)
Width: 30mm~1600mm
Length: 30m~10,000m

• Clean Notebook



M05-S-000

Features

- Easy to write on
- Tear resistance
- High-density polyethylene cover, plastic spirals and durable clean paper
- Translucent cover allows the reader to easily identify the notebook's contents
- Spiral design allows the notebook to lie flat and stay opened

Line: Ruled, Checked
Custom sizes are also available

• Continuous Printing Paper



M04-S-000

- Made of polstar clean paper
- Strong and durable
- Suitable for Cleanroom environment

Item	Weight(gsm)	Size (mm)		Packing
Clean Paper	72 80 100 250	A3	420 x 297	250 sheets/pk, 5 pks/ctn
		A4	210 x 297	250 sheets/pk, 10 pks/ctn
		A5	210 x 148	250 sheets/pk, 20 pks/ctn
		B4	257 x 364	250 sheets/pk, 5 pks/ctn
		B5	182 x 257	250 sheets/pk, 10 pks/ctn
Full Sized Clean Paper	72, 80, 100, 250	FULL SIZE	645 x 900	9 sheets of A4 size are available
			850 x 900	12 sheets of A4 size are available
Clean Paper in Roll	72, 80, 100, 250	2", 3" (core) X 30~1600mm(W) x 30~10,000m(L)		
Clean Paper (EC)	72	White, R. Blue, L. Blue, Green, Pink, Yellow, Orange		
TF Clean Paper	72	White, L. Blue		
Continuous Printing Paper	72, 80, 100	9.5" X 11"		2,000 sheets/ctn
		15" X 11"		2,000 sheets/ctn
Standard Color	White, S. blue, R. Blue, L. Blue, Green, Pink, Yellow, Orange			

* Other weights, colors and sizes are also available under minimum production q'ty.

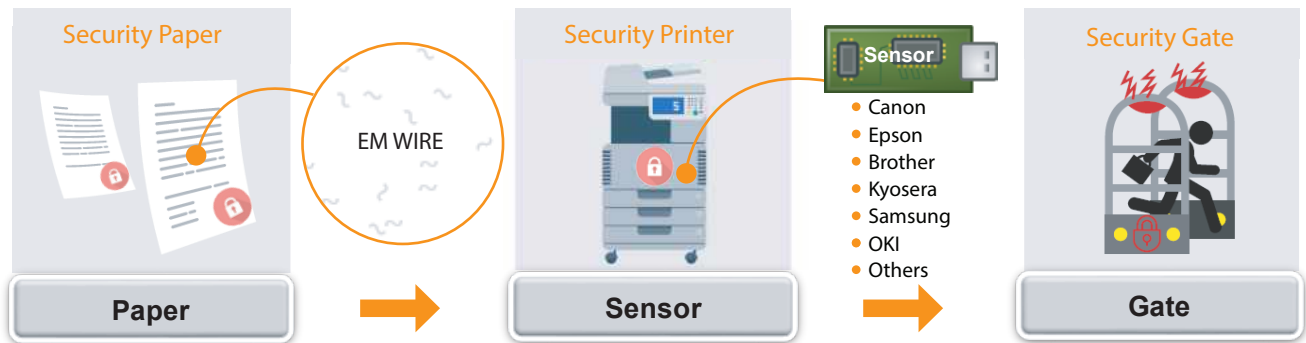
Clean Notebook	72, 80	Spiral / A4	210 x 297	50 sheets/book
		Spiral / A5	210 x 148	50 sheets/book
		Spiral / A6	105 x 148	50 sheets/book
		Stapler/A4	210 x 297	30 sheets/book
		Stapler/A5	210 x 148	30 sheets/book

* Other weights, sizes and sheets are also available under minimum production q'ty.

6 Stationery

• Security Paper, Printer and Gate

Structure of Security Solution



Security Paper

Security paper is made of micro wire materials which are virtually impossible to remove. Moreover, it has the same thickness as plain paper. It is designed to trigger detection alarms at the security gate when any confidential document is attempted to be carried out.

Printer Sensor

The self-developed mini security sensor embedded in any multi-function printer allows for a relatively low initial cost by ensuring single sensor installation on a printer with two or more trays. Any regular printer can be transformed to a security printer by simply installing the security sensor. The security sensor embedded in the printer only works with the security paper and rejects regular paper without printing.

Security Gate

This gate is custom engineered with the security paper to maximize detection sensitivity to protect your important documents from information theft.

Reference Installations



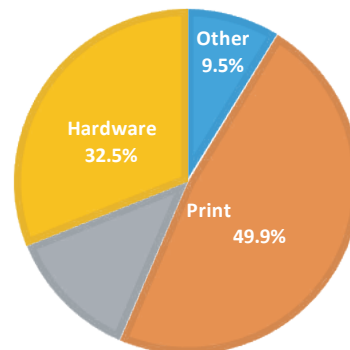
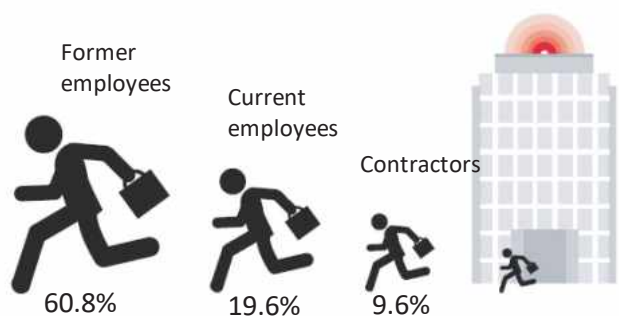
Main Entrance



6 Stationery

How much important Hardcopy Document Security?

Data Leakage Status



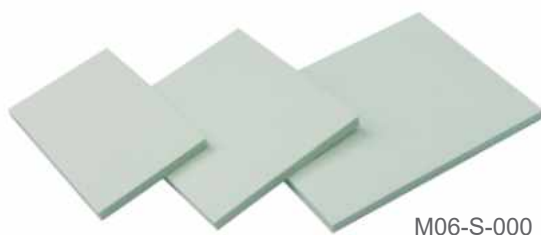
Data Source : Japan Network Security Association

Hard Copy Document take up 50%

Hard Copy Document Leakage Cases

- National Security Agency(NSA) contactor put the printed top-secret document in her stockings and later gave it to news outlet – The Washington Post. June 2, 2016
- Former FBI has been charged for leaking secret document to news outlet. He allegedly continued cutting, pasting screen shots and printing some out – Star Tribune. March 29, 2018
- Fund operation document leaked – Special Economics. February 2, 2017

• Clean Memo Tag



- Designed with special adhesive
- Light weight
- No extractables left behind
- Easy to write on
- Ideal for simple notes and writing reminders

• Clean Label



- Polstar Clean Label is for the purpose of memo, data writing or bar coding on wafer carrier or box.
- Particle-free PP film with acrylic glue minimizes contamination and is free from unwanted adhesive residue after the label is removed.
- As the film is also chemical treated for bar code printing, the recognition error from the the readers will be minimized.
- Custom sizes are also available.

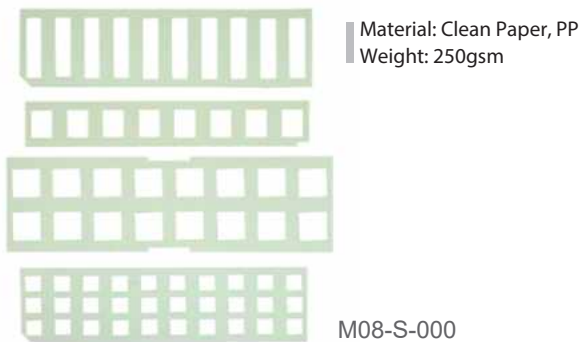
6 Stationery

● Interleaf



Item Code	Material	Shape	Size	Weight(g)	Thickness	Application
			(inch, mm)		(um, +/-3)	
M09-S-001	Cleanroom Paper	Circle	6" (dia.)	72	91	Wafer
M09-S-002	Cleanroom Paper	Circle	8" (dia.)	72	91	Wafer
M09-S-006	Tyvek Paper	Circle	8" (dia.)	72	191	Wafer
M09-S-003	Cleanroom Paper	Circle	12" (dia.)	72	91	Wafer
M09-S-009	Cleanroom Paper	Tetragon	55 x 210	72	91	PCB
M09-S-010	Cleanroom Paper	Tetragon	120 x 120	72	91	PCB
M09-S-011	Cleanroom Paper	Tetragon	123 x 123	72	91	PCB
M09-S-012	Cleanroom Paper	Octragon	156 x 156	72	91	Solar glass
M09-S-013	Cleanroom Paper	Tetragon	182 x 182	72	91	Solar glass
M09-S-014	Cleanroom Paper	Tetragon	420 x 510	72	91	PCB
M09-S-016	Cleanroom Paper	Tetragon	210 x 297	72	91	Printed form
M09-S-000	PP	Tetragon	on demand	95		High-end

● Lead Frame Separator



● ESD Clipboard



M11-S-001(A4)

Material: Body- Static Dissipative PMMA(Acrylic) / PC
Clip- S/Steel+Plastic
Size: A4, A5
S/R: 10e6 ~ 10e8 ohm

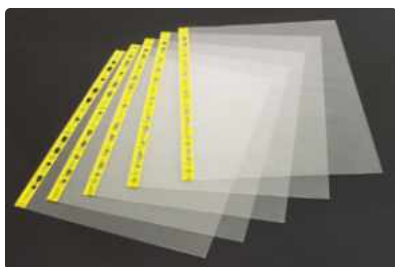


M11-S-003

Material: Leather
Size: A4
Color: Black
Surface Resistance: 10E5~10E8 ohm

6 Stationery

• ESD Clear File



Material: PP
Size: A3, A4, B4, etc.
Thickness: 0.05mm
S/R: $10e9 \sim 10e11$ ohm

• ESD Document Holder

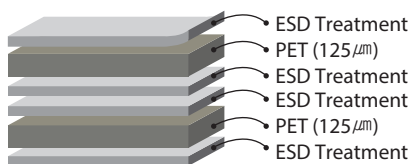


M14-S-004(A4)

Features

- Protect documents, especially thinner files
- Cleanroom compatible
- Open 2 ways (top & side)

Material: PET
Size: A4
Thickness: 0.2mm
S/R: $10e5 \sim 10e7$ ohm (both side)



M14-S-007

Material: ABS
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm



M14-S-008
M14-S-009

Material: PETG
Size: A4
Back width: 20mm/30mm
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm



M14-S-010

Material: ABS
Size: A4 (3 Layers)
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm



M14-S-011

Material: ABS
Size: A4
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm

6 Stationery

● ESD Ring Binder



M15-S-001
M15-S-002
M15-S-003
M15-S-004
M15-S-005
M15-S-006

Material: PU, Leather Surface
Size: 45mm, 75mm
Color: Black
Surface Resistance: 10E5~10E8 ohm

A4, 45mm, 2rings, PVC
A4, 45mm, 3rings, PVC
A4, 75mm, 2rings, PVC
A4, 75mm, 3rings, PVC
A4, 45mm, 3rings, PU
A4, 45mm, 3rings, Paper, Blue

● ESD Laminating Film



M13-S-004



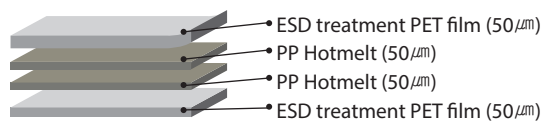
M13-S-006

Features

- Good Transparency
- 2 Colors
- Good performance in Laminating
- Semi-permanent surface resistivity
- Film in roll type is also available on request

Applications

- Protect documents with ESD laminating.



Physical properties

Properties		Unit	M13-S-004	M13-S-006	Test Method
			Value		
Thickness	Base Film	μm	50±2		ASTM D257
	PP Hotmelt	μm	50±3		
Total Thickness		μm	200±10		
Size			A4 / A3 / Roll (1m x 500m)		
Color			Clear	Light grey	
Surface Resistance (Out)		Ω	Max.10e6	Max.10e6	
Surface Resistance (In)			Max.10e6	Max.10e6	
Triboelectricity		V	Max300	Max.500	

6 Stationery

• ESD Mouse Pad



Features

- Excellent ESD properties
- Dual layer structure
- Easy Mouse operating
- Smooth surface

Color: Dark Blue / Black

Materials: Microfiber ESD fabric (top) / Conductive rubber (bottom)

Top surface: $10e6 \sim 10e7$ ohm / Bottom surface: $10e4 \sim 10e5$ ohm

Size

1.4mm(T) x 170mm x 210mm (M20-S-001)

1.4mm(T) x 200mm x 250mm (M20-S-002)



M20-S-003

Material: Black Lycra Fabric + PU Gel

Color: Black

Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Mouse



M25-S-002

Wireless

Material: ABS

Color: Black

Specification: USB Port

Surface Resistance: $10E5 \sim 10E8$ ohm



M25-S-001

Material: ABS

Color: Black

Specification: USB Port

Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Keyboard



M24-S-001

Wireless

Material: ABS

Color: Black

Specification: USB Port

Surface Resistance: $10E5 \sim 10E8$ ohm



M24-S-002

Material: ABS

Color: Black

Specification: USB Port

Surface Resistance: $10E5 \sim 10E8$ ohm

6 Stationery

• ESD Cleanroom Pen



M39-S-001(Black)
M39-S-002(Blue)
M39-S-003(Red)

Colors: Black, Blue, Red
Packing: 2pcs/bag, 100bags/case

Features

- Barrel is made of HDPP(high-density polypropylene)
- Low Sodium, Chloride and Heavy Metal used Ink
- Non-smearing permanent Ink
- Double poly packed with cleanroom bags in Class 100(ISO 5)
- Low outgassing and particulate generation material is used
- Rectangular clip design

• ESD Pen



M30-S-001

Material: ABS
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Pen Stand



M31-S-001

Material: ABS (Plastic Part)
Color: Black (Plastic Part)
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Cutter



M32-S-001

Material: ABS (Plastic Part)
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Puncher



M28-S-001

Material: ABS (Plastic Part)
Color: Black (Plastic Part)
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Stapler



M29-S-001

Material: ABS
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Tape Cutter



M36-S-001

Material: ABS
Diameter: 25mm, 75mm
Color: Black
Specification: Tape inner
Surface Resistance: $10E5 \sim 10E8$ ohm



M36-S-002

Handheld type
Material: ABS
Size: 2"/2.5"
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm

6 Stationery

• ESD Telephone



M35-S-001

Material: ABS
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Scanner



M37-S-001

Material: ABS (Plastic Part)
Color: Black
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Clip



M33-S-001

Material: Plastic
Size: L, M
Color: Opaque
Surface Resistance: $10E5 \sim 10E9$ ohm

• ESD Calculator



M23-S-001

Material: ABS
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Ruler



M26-S-001

Material: Plastic
Color: invisible
Surfaceification: 30cm
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Scissors



M27-S-001

Material: ABS(Plastic Part)
Color: Black(Plastic Part)
Surface Resistance: $10E5 \sim 10E8$ ohm

• ESD Display Rack



M34-S-001

Wall Mounting type
Material: ABS base+pp
Paper Size: 210*297mm
Color: Black, Black leaflets
Surface Resistance : $10E7 \sim 10E9$ ohm
Leaf: 10 pockets



M34-S-002

Desktop type
Material: ABS base+pp+metal
Paper size: 210*297mm
Color: black stand, black leaflets
Surface Resistance : $10E7 \sim 10E9$ ohm
Leaf: 20 pockets /40 sheets
Half moon handle
Can be rotate 360° by hand

6 Stationery

• ESD Cleanroom Bags

Features

- TPU material
- Surface Resistance: $10e4 \sim 10e6$ ohm
- Good durability and elasticity
- Wear, cold and oil resistance
- ECO friendly and no harmful to human body
- Expandable (backpack, cross bag)
- Adjustable shoulder straps
- Suitable for cleanroom and ESD environment



Backpack



M38-S-001 (Clear)



M38-S-002 (Hazy)

300 x 410 x 150
300 x 410 x 220
(expanded)

Cross bag



M38-S-004 (Hazy)



M38-S-003 (Clear)

390 x 290 x 140
390 x 290 x 210
(expanded)



M38-S-006 (Hazy)



M38-S-005 (Clear)

230 x 260 x 115

Pouch



M38-S-007 (S)
M38-S-008 (M)
M38-S-009 (L)
M38-S-010 (Set)

S - 215 x 155
M - 315 x 215
L - 330 x 245

(Unit: mm)

7 Gloves

• High Tech Assembly Gloves

Our High Tech Assembly Gloves are Polyamide Fiber Gloves, which are popular for their high strength, durability, and comfortability.

Features

- Polyurethane coating provides super grip and abrasion resistance.
- Polyurethane coating eliminates fingers fatigue associated with finger cots and allows handling of very small parts without fingerprint contamination.
- Protects handling products from sweat and dust.
- Optimum comfortability and dexterity
- Low lint
- Knit wrist, Seamless
- Oil resistant (NBR)

Applications

- General assembly
- Electronics, Component handling
- Light engineering work
- Maintenance or micro-mechanical tasks
- Pharmaceutical processing
- Inspecting precise parts, articles, etc.
- Delicate and precise operations, such as assembly jobs in electronic, semiconductor, micro-processor and compact disk lines.



M01-G-001 (SHG-100)



M02-G-001 (SFG-110)



M03-G-001 (TFG-121)



M04-G-001 (PFG-131)



M05-G-001 (TGG-122)



M06-G-001 (PGG-132)



M06-G-002 (PBG-139)



M06-G-003 (PGB-139)



M06-G-005 (PBN-139)

Item Code	Model	Product name	Liners		Coating			Dots			EN388
			Material	Color	Material	Color	Area	Material	Area	Color	
M01-G-001	SHG-100	Half Elastic Fit Gloves	Nylon	White							
M02-G-001	SFG-110	Elastic Fit Gloves	Nylon	White							
M03-G-001	TFG-121	Top PU Gloves	Nylon	White	PU	White	Finger tips				
M04-G-001	PFG-131	Palm PU Gloves	Nylon	White	PU	White	Palm				
M05-G-001	TGG-122	Top Grey PU Gloves	Nylon	Grey	PU	Grey	Finger tips				
M06-G-001	PGG-132	Palm Grey PU Gloves	Nylon	Grey	PU	Grey	Palm				
M06-G-002	PBG-139	Black Palm NBR Foam Gloves	Nylon,Spandex	Black	NBR Foam	Black	Palm				4121
M06-G-003	PGB-139	Grey Palm NBR Foam Gloves with Dots	Nylon,Spandex	Grey	NBR Foam	Black	Palm	PVC	Palm	Black	4131
M06-G-004	PGY-139	Grey Palm NBR Foam Gloves with Dots	Nylon,Spandex	Grey	NBR Foam	Black	Palm	PVC	Palm	Yellow	4131
M06-G-005	PBN-139	Nylon NBR Palm Coating Gloves	Nylon,Spandex	Black (twisting threads)	NBR Foam	Black	Palm				4131

7 Gloves

• Static Control Gloves

Features

- Made of static control carbon yarn mixed nylon(ESD) and copper yarn mixed nylon(Conductive)
- Excellent when tactile sensitivity is important in handling small parts
- Suitable for the places where cleanliness and ESD control is required
- Provides protection to operator's hands and products being handled
- Good elasticity, ventilation and minimizing sweat buildup
- Good grip
- Stable ESD properties

Applications

- Good for handling electronic instruments, circuit boards and components.
- Prevent products from miscellaneous disturbances or accidents caused by static electricity.
- Antistatic treated surface semiconductors, micro-processors and compact disks.
- Assembling LSI, VLSI, Semiconductors as well as computers and precise instruments



M10-G-001 (SCG-310)



M11-G-001 (TCG-321)



M20-G-001 (NPA-220)



M13-G-001 (PCG-331)



M12-G-001 (TDC-391)



M07-G-003 (WKG-220)



M08-G-002 (WKT-223)



M09-G-002 (WKP-234)



M08-G-004 (TDK-299)



M18-G-002 (UKL-832)



M17-G-002 (UKT-921)

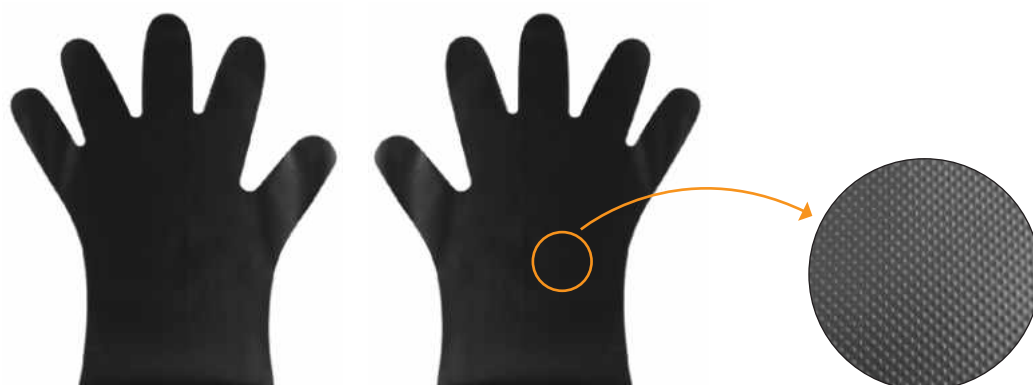


M17-G-001 (UKT-821)

7 Gloves

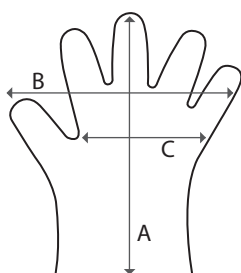
Item Code	Model	Product name	Liners	Coating				Dots			Surface Resistance (ohm)
			Material	Color	Material	Color	Area	Material	Area	Color	
M10-G-001	SCG-310	Conductive Elastic Fit Gloves	Copper yarn, Nylon	Copper							10e3~4
M11-G-001	TCG-321	Conductive Top PU Gloves	Copper yarn, Nylon	Copper	PU	White	Finger tips				10e3~4
M12-G-001	TDC-391	Conductive Top PU Gloves with Dots	Copper yarn, Nylon	Copper	PU	White	Finger tips	PVC	Palm	White	10e3~4
M13-G-001	PCG-331	Conductive Palm PU Gloves	Copper yarn, Nylon	Copper	PU	White	Palm				10e3~4
M13-G-002	UCP-931	Conductive U2 Palm PU Gloves	Copper yarn, Nylon	Copper	PU	White	Palm				10e3~4
M07-G-005	SKG-220	ESD Elastic Fit Gloves	Carbon yarn, Nylon	Grey							10e5~7
M08-G-005	SKT-223	ESD Top PU Gloves	Carbon yarn, Nylon	Grey	PU	White	Finger tips				10e5~7
M09-G-004	SKP-234	ESD Palm PU Gloves	Carbon yarn, Nylon	Grey	PU	White	Palm				10e5~7
M07-G-003	WKG-220	ESD Elastic Fit Gloves	Carbon yarn, Nylon	Grey							10e7~9
M08-G-002	WKT-223	ESD Top PU Gloves	Carbon yarn, Nylon	Grey	PU	White	Finger tips				10e7~9
M09-G-002	WKP-234	ESD Palm PU Gloves	Carbon yarn, Nylon	Grey	PU	White	Palm				10e7~9
M08-G-004	TDK-299	ESD Top Grey PU Gloves with Double Dots	Carbon yarn, Nylon	Grey	PU	Grey	Finger tips	PVC	Whole	Grey	10e7~9
M17-G-001	UKT-821	ESD U2 Top PU Gloves	Carbon yarn, Nylon	White, Grey	PU	White	Finger tips				10e7~9
M17-G-002	UKT-921	ESD U3 Top PU Gloves	Carbon yarn, Nylon	White, Grey	PU	White	Finger tips				10e7~9
M18-G-001	UKP-831	ESD U2 Palm PU Gloves	Carbon yarn, Nylon	White, Grey	PU	White	Palm				10e7~9
M18-G-002	UKL-832	ESD Light Grey U2 Gloves	Carbon yarn, Nylon	Grey	PU	Grey	Palm				10e7~9
M18-G-003	UKP-931	ESD U3 Palm PU Gloves	Carbon yarn, Nylon	White, Grey	PU	White	Palm				10e7~9
M19-G-001	NTA-221	Antistatic Top PU Gloves	AS coating, Nylon	White	PU	White	Finger tips				10e6~8
M19-G-002	NTD-229	Antistatic Top PU Gloves with Dots	AS coating, Nylon	White	PU	White	Finger tips	PVC	Palm	White	10e6~8
M19-G-003	NTD-228	Antistatic Top PU Gloves with Full Dots	AS coating, Nylon	White	PU	White	Finger tips	PVC	Palm	White	10e6~8
M20-G-001	NPA-220	Antistatic Palm PU Gloves	AS coating, Nylon	White	PU	White	Palm				10e6~8

● ESD PE Gloves



M34-G-001

Material: Polyethylene, Carbon
 Thickness: 40um
 Surface resistance: < 10e9 ohm
 Size: S, M, L
 Packing: 100pairs/box, 18boxes/carton



Size	A	B	C
S	280	220	130
M	280	234	130
L	280	241	140

● Antistatic Polyester Gloves

- Material: tricot knitted polyester with ECF
- SR: 10e7~10e9 ohm



M22-G-001 (WTG-410)

● Antistatic PVC Dot Gloves

- Material: tricot knitted polyester with ECF, PVC Dot on Palm
- SR: 10e7~10e9 ohm



M22-G-004 (WTG-420)

● Antistatic PU ECF Gloves

- Material: tricot knitted polyester with ECF, PU coated on Palm
- SR: 10e7~10e9 ohm



M22-G-013 (WTG-431)

● Antistatic PU Thick Gloves

- Material: tricot knitted polyester, with ECF
PU laminated on TC fabric on Palm
- SR: 10e7~10e9 ohm



M22-G-012 (WTG-440)

● Antistatic Microfiber Gloves

- Material: tricot knitted polyester with ECF, Microfiber fabric
- SR: 10e7~10e9 ohm



M35-G-001 (WTG-460)

● Microfiber Gloves

- Material: Microfiber fabric



M36-G-001 (WTG-470)

7 Gloves

• Safety Gloves

Features

- Material is ultra high molecular
- Strong and low lint
- Light weight polyethylene for delicate and precise operations
- Designed to protect hands from various damage by sharp materials
- Excellent resistance to abrasion and cuts
- Cut resistant (HPPE)
- Heat resistant (Kevlar)

Applications

- Glass handling
- Recycling
- Sheet metal work
- Cutting
- Bottling and Canning
- Heating and air conditioning



M14-G-001 (DYG-410)



M15-G-001 (DYG-431)



M16-G-003 (DGG-452)



M16-G-002 (PND-472)



M16-G-003 (DGG-452)



M16-G-004 (DNG-499)



M16-G-007 (DUF-492)



M21-G-007 (KTG-570)



M21-G-005 (KNG-569)

Item Code	Model	Product name	Liners		Coating			EN388
			Material	Color	Material	Color	Area	
M14-G-001	DYG-410	Cut Resistant Gloves	HPPE, Nylon, Spandex	White				
M15-G-001	DYG-431	Cut Resistant Palm PU Gloves	HPPE, Nylon, Spandex	White	PU	White	Palm	4342
M15-G-002	DYG-432	Cut Resistant Palm Grey PU Gloves	HPPE, Nylon, Spandex	White	PU	Grey	Palm	4342
M16-G-001	DNG-492	Grey Cut Resistant Palm Grey PU Gloves	HPPE, Nylon, Spandex	Grey	PU	Grey	Palm	4342
M16-G-002	PND-472	Plating knited Cut Resistant Palm Grey PU Gloves	HPPE, Nylon, Spandex	Grey	PU	Grey	Palm	4343
M16-G-003	DGG-452	Grey Cut Resistant Glassfiber Palm Grey PU Gloves	HPPE, Nylon, Spandex, Glass fiber	Grey	PU	Grey	Palm	4543
M16-G-004	DNG-499	Grey Cut Resistant Black NBR Foam Gloves	HPPE, Nylon, Spandex	Grey	NBR Foam	Black	Palm	4443
M16-G-005	DGG-459	Grey Cut Resistant Glassfiber Black NBR Foam Gloves	HPPE, Nylon, Spandex, Glass fiber	Grey	NBR Foam	Black	Palm	4543
M16-G-006	DGG-458	Grey Cut Resistant Glassfiber Black NBR Gloves	HPPE, Nylon, Spandex, Glass fiber	Grey	NBR	Black	Palm	4543
M16-G-007	DUF-492	HPPE/Nylon U3 Grey PU Palm Coating Gloves	HPPE, Nylon, Spandex	White/U3 Full	PU	Grey	Palm	4342
M16-G-008	DUH-492	HPPE/Nylon U3 Grey PU Palm Coating Gloves	HPPE, Nylon, Spandex	White/U3 half	PU	Grey	Palm	4342
M21-G-001	KFG-510	Kevlar Gloves	Kevlar yarn, spandex	Yellow				
M21-G-006	KTG-510	Kevlar Top Grey PU Gloves	Kevlar yarn, spandex	Yellow	PU	Grey	Top	
M21-G-003	KPG-532	Kevlar Palm Grey PU Gloves	Kevlar yarn, spandex	Yellow			Palm	4342
M21-G-004	KGP-552	Kevlar Glass fiber Palm Grey PU Gloves	Kevlar yarn, spandex, Glass fiber	Yellow	PU	Grey	Palm	
M21-G-005	KNG-569	Kevlar Palm NBR Gloves	Kevlar yarn, spandex	Yellow	NBR	Black	Palm	
M21-G-007	KFG-570	Kevlar 7 gauge Two-Ply Cotton Gloves	Kevlar yarn, spandex	Yellow				

7 Gloves

• Cold Resistant Gloves

Terry Latex Coating Thermal Gloves



M41-G-001

Features

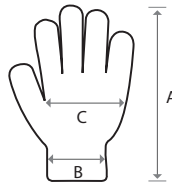
- Seamless cotton terry yarn with a brushed terry ensures excellent warmth and comfort.
- Crinkled latex palm coating provides extra grip and durability as well as outstanding abrasion resistance.

Material

Liner- Cotton mixed polyester & acrylic

Coating- Latex (Condensed crinkled grey latex palm coating)

Packing: 12prs/bag, 6bags/ctn



Size	(cm,g)	
	M	L
A	25	27
B	5	7
C	10	10.5
Weight	115	117

Fleece Lined Leather Thermal Gloves



M41-G-010

Features

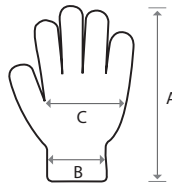
- Fleece inner liner offers warmth and coziness.
- Keep hands warm while allowing maximum dexterity to operate tools or machinery.
- Made of the finest grain leather, which is known for its breathability, softness and comfort.
- Naturally resistant to moisture like oil and water.

Material

Grain Cow Leather

Inner liner- Polar Fleece

Packing: 10prs/bag, 10bags/ctn



Size	(cm,g)	
	Free	
A	25	
B	6	
C	11	
Weight	110	

Explained: The signs in the EN pictogram



EN 388
1234BP

Impact Protection (no P or P)

Cut Resistance (A-F)

Puncture Resistance (1-4)

Tearing Resistance (1-4)

Cut Resistance, Coup Test (1-5)

Abrasion Resistance (1-4)



EN 407
123412

Large Quantities of Molten Metal (0-4)

Small Splashes of Molten Metal (0-4)

Radiant Heat (0-4)

Convective Heat (0-4)

Contact Heat (0-4)

Fire Properties of the Material (0-4)



EN 511
121

Protection Against Water Penetration (0 or 1)

Protection Against Contact Cold (0-4)

Protection Against Convective Cold (0-4)

Reference : <https://guidegloves.com/guidance/standards/>

7 Gloves

• ESD Heat Resistant Gloves



M24-G-006 (EHR-150N)



M24-G-007 (EHR-300N)



M24-G-008 (EHR-150/45N)



M24-G-009 (EHR-300/45N)

Surface Resistance: 10e9 ohm
Heat Resistance: Up to 150°C
Length: 280mm → M24-G-006(EHR-150N)
450mm → M24-G-008(EHR-150/45N)

Surface Resistance: 10e9 ohm
Heat Resistance: Up to 300°C
Length: 280mm → M24-G-007(EHR-300N)
450mm → M24-G-009(EHR-300/45N)

Materials and Layer Constructions

Palm + Back

- Polyurethane film laminated nylon tricot fabric with Beltron conductive fiber in 5mm stripe
- Heat insulating felt (polyester) ②
- Nylon Tricot inner ③
- Conductive yarn arranged DuPont Nomex fabric ④



Palm

④
①
Air Layer
②
Air Layer
③

Back

①
Air Layer
②
Air Layer
③



Palm

④
①
Air Layer
②
Air Layer
③

Back

①
Air Layer
②
Air Layer
③

»Silicone free type is available on request.

● Cleanroom Gloves

Latex Gloves

Item Code	M28-G-001	
Material	Natural High Grade Rubber Latex	
Color	Natural	
Length (All sizes)	12"(300mm) ± 10mm	
Palm width (S/M/L)	84/94/105 ± 3mm	
Thickness (single wall)	Finger	0.16 ± 0.02mm
	Palm	0.14 ± 0.02mm
Features	Powder free, Palm textured, Beaded cuff, Non-sterile, Double Chlorinated	
Packing	100pcs/bag, 10bags/carton	



M28-G-001

Latex Gloves

Item Code	M28-G-002	
Material	Natural High Grade Rubber Latex	
Color	Natural	
Length (All sizes)	9"(230mm) ± 10mm	
Palm width (S/M/L)	84/94/105 ± 3mm	
Thickness (single wall)	Finger	0.13 ± 0.02mm
	Palm	0.12 ± 0.02mm
Features	Powder free, Palm textured, Beaded cuff, Non-sterile, Single Chlorinated	
Packing	100pcs/box, 10boxes/carton	



M28-G-002

Nitrile Gloves

Item Code	M27-G-001	M27-G-002
Class	Class 100	Class 1000
Material	100% Synthetic Nitrile Latex	
Color	White	
Length (All sizes)	12"(300mm) ± 10mm	
Palm width (S/M/L)	84/94/105 ± 3mm	
Thickness (single wall)	Finger	0.13 ± 0.02mm
	Palm	0.12 ± 0.02mm
Features	Powder/Silicone/Amide/Phthalates free, Finger Textured, Beaded cuff	
Packing	100pcs/bag, 10bags/carton	



M27-G-001

Nitrile Gloves

Item Code	M27-G-003	
Material	Nitrile (Carboxylated butadiene acrylonitrile)	
Color	Blue	
Length (All sizes)	9"(230mm) ± 10mm	
Palm width (S/M/L)	84/94/105 ± 3mm	
Thickness (single wall)	Finger	0.08(min)
	Palm	0.06(min)
	Cuff	0.04(min)
Weight(g) (S, M, L)	3.4/3.7/4.0	
Features	Powder Free(1mg/glove), Finger Textured, Beaded cuff, Single Chlorinated	
Packing	100pcs/box, 10boxes/carton	



M27-G-003

Vinyl Gloves

Item Code	M25-G-001	
Material	Polyvinyl Chloride	
Color	Clear	
Length (All sizes)	280mm(min)	
Palm width (S/M/L/XL)	85/95/105/115 ± 5mm	
Thickness (single wall)	Finger	0.09 ± 0.03mm
	Palm	0.10 ± 0.03mm
Weight (g) (S,M,L,XL)	6.6/7.0/7.5/8.0	
Features	Powder-free/Non-sterile/Ambidextrous/Beaded cuff/Smooth external finish	
Packing	100pcs/bag, 10bags/carton	



M25-G-001

7 Gloves

Seamless Gloves

Seamless Gloves is breathable Gloves. It consists of polyester knitted fabric and laminated with breathable polyurethane film, which combines friendly feel of fabric with the protection of elastomer. Its moisture permeability protects operators from rash and harsh chemicals.

Features

- Seamless high frequency welding instead of sewing
- Having antistatic properties after wearing
- Can operate smart phone touch screen with your gloves on
- Laundered with 18Mohm deionized water twice and packed in Cleanroom
- Excellent comfortability
- No need to wear inner gloves
- Water proof and vapor permeability
- Prevents operators from skin irritation and eczema
- Improve work efficiency
- Reusable after washing

Materials

- Polyurethane Coated Knitted Polyester
(Inner layer - Knitted Polyester / Outer layer - Polyurethane)

Applications

- Pharmaceutical, Medical and Hospital Industries
- Semiconductor and Electronic Industries

		Glove Length	Cuff Width
Size (mm)	Small	258	115
	Medium	265	120
	Large	300	132
Packing	10pairs/bag, 50bags/carton		

Ion	Unit	Result	Test Method
DOP	(mg/kg)	N/D	KS M 0027(GC/MS)
DOP	(mg/l)	N/D	KS M 0027(GC/MS)
Na	(mg/l)	0.7	ICP
Mg	(mg/l)	N/D	ICP
K		N/D	ICP
Ca		N/D	ICP
NH4		N/D	UV/Vis
NO2		N/D	ICP
NO3		N/D	ICP
SO4		N/D	ICP
Cl		0.8	ICP



Properties	Unit	Result	Test Method
Thickness	mm	0.23±0.05	JIS L 1018
Weight	Small	(g/piece)	72±2
	Medium	(g/piece)	82±2
	Large	(g/piece)	92±2
Elongation	%	86.8	
Tensile strength	(kPa)	553	
Moisture permeability	(g/m ² /24hr)	2,012	JIS L 1099
Water resistance	(Mm/H ₂ O)	8,000 ↑	JIS L 1092

7 Gloves

• Ultra Pure PE Gloves



M31-G-001

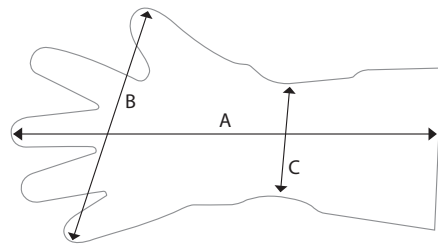
Ultra Pure PE Gloves(UPPG), made of additive free pure polyethylene, are high pure and clean Gloves, which are suitable for a Polysilicon manufacturing process.

Originally, UPPG have been developed to meet the high cleanliness level of polysilicon manufacturing industry.

The main application of this glove is to handle pure chunk of polysilicon in the polysilicon manufacturing process or it can be used in the process of monocrystal ingot in wafer factories as well.

Specifications

Category	Descriptions			Remark
Item code	M31-G-001			
Material	Pure PE			
Thickness	80um			
Length	Size	S	M	
	A	470mm +/- 10mm	470mm +/- 10mm	
	B	244mm +/- 2mm	275mm +/- 2mm	
	C	120mm +/- 2mm	130mm +/- 2mm	
Packing	100pcs/bag, 10bags/case(double packed in Class 10~100)			
Available Sizes	S, M			



** What is Polysilicon?

Polycrystalline silicon also known as Polysilicon is a material consisting of small silicon crystals.

The main component of Polysilicon is Si. Generally, the applications of Polysilicon are for a key material of solar panels and semiconductor, which is divided by the grade of the purity. The purity of 6N(99.9999%) is for a solar energy industry and 11N(99.999999999%) is for a semiconductor industry.

Polysilicon is a key component of solar panel construction and wafer in semiconductor. When it comes to solar panel construction, it plays a key role to convert light energy to electric energy in solar cells.

** Major Polysilicon Manufacturers

Hemlock Semiconductor (USA)
 OCI (Korea)
 Waker Chemie (Germany)
 GCL-Poly(China)
 REC(Renewable Energy Corporation ASA) (Norway)
 Tokuyama (Japan)
 MEMC Electronic Materials (USA)
 LDK Solar (China)
 KCC (Korea)
 Hankook Silicon (Korea)

7 Gloves

• F-Telon Gloves

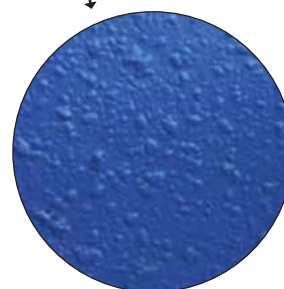
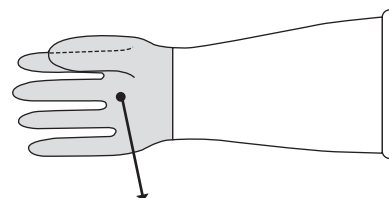


M26-G-001

Material: NBR / CSM / Metallic oxide / Compounding ingredient(color pigment, etc.)
Color: Dark blue
Packing: 1pair/box

Features

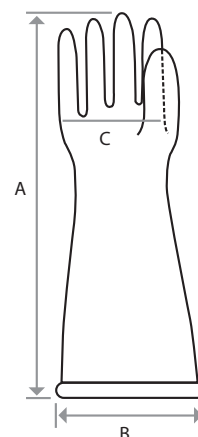
- Non-slip
- Good chemical resistant properties
- 2 layer structures(CSM/NBR)



85
Gloves

Chemical resistant properties

Chemical name	Detection time (min.)	Class*(1)	Degradation (%)	Class*(2)	Test method
Acetone	30	2			EN374-3 2003
Acetonitrile	324	5			
Carbon bisulfide	9	-			
Dichloromethane	6	-			
Diethylamine	38	2			
Ethyl acetate	42	2			
N-heptane	>480	6			
Methanol	>480	6			
Sodium hydroxide 40%	>480	6	90.6->86.3	4	
Sulfuric acid 96%	>480	6	90.6->84.5	4	
Tetrahydrofuran	15	1			
Toluene	17	1			
Nitric acid 62%	>480	6			
Nydrofluoric acid 46%	>480	6			
Ammonia 99.9%	>480	6			
Chlorine 99.5%	>480	6			
Hydrogen chloride 99%	>480	6			



*(1) Class6: >480
Class5: >240
Class4: >120
Class3: >60
Class2: >30
Class1: >10

*(2) Class4: </= 20
Class3: </= 40
Class2: </= 60
Class1: </= 80

	(mm)		
	A	B	C
M26-G-001	360	170	120
M26-G-002	580	230	120

8 Wipers

• Polyester Knit Wiper



9" x 9"

M01-W-004 (Polstar-970LD)



9" x 9"

M01-W-015 (Polstar-955)

100% Polyester continuous yarn used wiper

4" x 4" 600 sheets/pk, 6 pks/ctn

6" x 6" 300 sheets/pk, 10 pks/ctn

9" x 9" 150 sheets/pk, 8 pks/ctn

Features

- Cost-effective solution
- Good absorbing capacity
- Low particle generation
- Double packed in Class 100~1000 environment

Applications

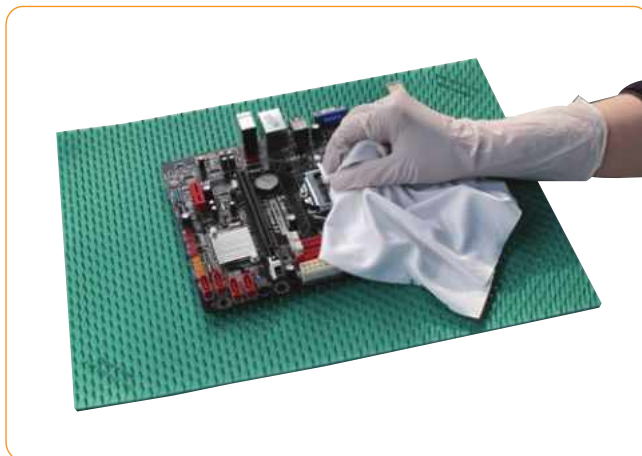
- Semiconductor
- TFT-LCD
- Cell phone module line
- PCB Industry
- Cleaning equipment



M01-W-025 (Inox-3140)

M01-W-026 (Inox-3070)

9" x 9", 100 pcs/bag, 10 bags/ctn



• Micro-Denier Fiber Wiper



9" x 9"

M02-W-001 (Polstar-935N)



9" x 9"

M02-W-012 (Polstar-930)

M02-W-015 (Polstar-937)



9" x 9"

M06-W-001 (Polstar-937E)

4" x 4" 600 sheets/pk, 6 pks/ctn

6" x 6" 150 sheets/pk, 10 pks/ctn

9" x 9" 150 sheets/pk, 8 pks/ctn

4" x 4" 600 sheets/pk, 6 pks/ctn

6" x 6" 150 sheets/pk, 10 pks/ctn

9" x 9" 150 sheets/pk, 8 pks/ctn

4" x 4" 600 sheets/pk, 6 pks/ctn

6" x 6" 150 sheets/pk, 10 pks/ctn

9" x 9" 150 sheets/pk, 8 pks/ctn

8 Wipers



9" x 9"

M02-W-004 (Inox-1003)

4" x 4", 400 sheets/pk, 6 pks/ctn
6" x 6", 50 sheets/bag, 2 bags/pk, 10 pks/ctn
9" x 9", 50 sheets/bag, 2 bags/pk, 10 pks/ctn



9" x 9"

M02-W-007 (Inox-1006)

4" x 4", 300 sheets/pk, 6 pks/ctn
6" x 6", 50 sheets/bag, 2 bags/pk, 10 pks/ctn
9" x 9", 10 sheets/bag, 10 bags/pk, 10 pks/ctn



9" x 9"

M02-W-027 (Inox-1050)

M02-W-028 (Inox-1080)

9" x 9", 100 pcs/bag, 10 bags/ctn

Features

- Excellent wiping without scratches
- Extremely low non-volatile residues and ions
- Excellent absorbing capacity
- Suitable for sensitive surface by its soft texture
- Double packed in Class 10~100 Cleanroom

Applications

- Sophisticated products
- Digital camera lens
- Printer drum
- Optical product
- TFT-LCD, PDA

Differences between microfiber wipers and typical polyester wipers

Materials

Microfiber wipers: microscopic polyester(70~80%) and polyamide(20~30%) fibers
Polyester wipers: 100% polyester

Touch

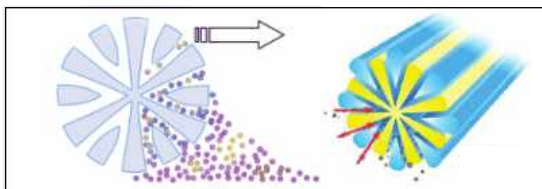
The touch of microfiber wipers compare to normal polyester wiper is much soft

Absorbency

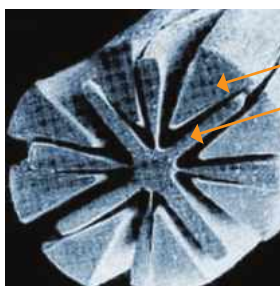
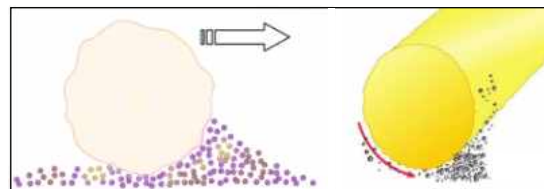
Microfiber wiper has better absorbency thanks to its unique fiber structure

- Enlarged cross section of single fiber

① Well-split microfiber



② Normal polyester fiber



Polyamide

Polyester

8 Wipers

• PVA Sponge Wiper



M04-W-001



M04-W-000

The Polstar PVA Sponge is a water-friendly wiper created by a foaming method using the material of PVA (Poly Vinyl Alcohol). It has continuous open-cell structure, high absorbency, durability and good resistance to chemicals. Thanks to its characteristic properties, the PVA sponge wiper is widely used in various industrial fields as well as in Cleanroom, such as PCB, Glass, Mirror, TV brown Tube, Optical instrument and many others. Typical sizes are 2mm x 9"x9", 2mm x 12" x 12", but a block type or a roll type PVA wiper is also available on request.

Features

- Neither fluff nor particle is generated.
- Excellent hydrophilic material.
- Excellent elasticity in wet conditions.
- High absorbency.
- Good chemical resistance
- Open-cell structure
- Antistatic function in wet

Packing

- 2mm (T) x 9" x 9": 10sheets/pack, 20packs/ctn
- 2mm (T) x 12" x 12": 10sheets/pack, 40packs/ctn

• Non-Woven Wiper



M05-W-000

Features

- Made of durable synthetic fiber
- High absorbency
- Low particle generation and non-volatile residues

Applications

- Pre-cleaning for spare parts of equipment
- Equipment
- Cleanroom wall
- Cleanroom access floor
- Use for Class 100 - 10,000 widely

8 Wipers



M05-W-009



M05-W-010



M05-W-011



M05-W-012



M05-W-013

Item Code/Parts No.		M05-W-009		M05-W-010		M05-W-011		M05-W-012		M05-W-013	
General Information		2025		2125		2225		2323		2429	
Weight	g/m ²	30	±3	30	±3	35	±3	68.2	±3	80	±3
Thickness	mm	0.25	±0.02	0.25	±0.02	0.3	±0.02	0.264	±0.02	0.5	±0.01
Width	mm	250	±2	250	±2	250	±2	230 (9")	±2	290	±2
Length	mm	250	±2	250	±2	250	±2	230 (9")	±2	300	±2
Compositions	%	Rayon 70 PET 30		Rayon 70 PET 20 / *LMP 10		Rayon 100		Polyester 45 Cellulose 55		PP Non-Woven 100	
Standard Packing		100pcs/bag 30bags/carton		100pcs/bag 30bags/carton		100pcs/bag 30bags/carton		300pcs/bag 10bags/carton		50pcs/bag 10bags/carton	
Vital Statistics		*LMP(Low Melt Polyester)									
Fibers	(ea/m ²)	9.5		9.2		<30		-		3.2	
Particles	≥ 0.3 μm	-		-		20-50	Biaxial Shake	-		-	
	≥ 0.5 μm	25	Biaxial Shake	13	Biaxial Shake	250	LPC	7 x 10 ⁸	TM-107 (Air)	≥ 30	Biaxial Shake
	cu.ft	980	Helmke Drum	83	Helmke Drum	-		-		-	
Absorbency	cc/m ² , sec.	337		313		380		<4	TM-108 (sec.)	320	
Time to 1/2 sorption	sec	2		2		1		-		2	
2-Propanol	%	0.011		0.017		0.017		-		0.017	
Ions											
Na	ppm	98		99		23		61		25.34	
K	ppm	8.5		9.1		0.7		7		4.18	
Ca	ppm	ND		ND		<0.15		-		1.13	
Mg	ppm	ND		ND		-		-		0.25	
Cl	ppm	-		-		5.3		18		15.99	
NO2	ppm	-		-		-		-		4.45	
NO3	ppm	-		-		-		-		7.83	
SO4	ppm	-		-		-		-		21.02	
NH3	ppm	-		-		-		-		5.42	
Fe	ppm	-		-		-		-		0.15	
Cu	ppm	-		-		-		-		0.1	
Al	ppm	-		-		-		-		0.098	
Ni	ppm	-		-		-		-		ND	
Zn	ppm	-		-		<0.15		-		0.15	
Mn	ppm	-		-		-		-		0.15	
Residue/Water	ppm	-		-		180		-		0.10	
Residue/IPA	ppm	-		-		50		-		-	

9 Packaging Bags and Film

Electro Static Discharge(ESD) is nothing new, but its effect on electronic components and devices is serious if it is not properly controlled. Uncontrolled ESD causes not only partial damage, but also sometimes destroys electronic components and devices totally. Together with controlling of ESD, moisture is also essential to be controlled for sensitive devices or components.

Apart from personal grounding, sensitive goods should also be well protected from ESD and moisture during transportation and storage.

There are several types of packaging bags in the market. The most important thing is to select a suitable bag for each application.

• Static Shielding Bag(SSB)

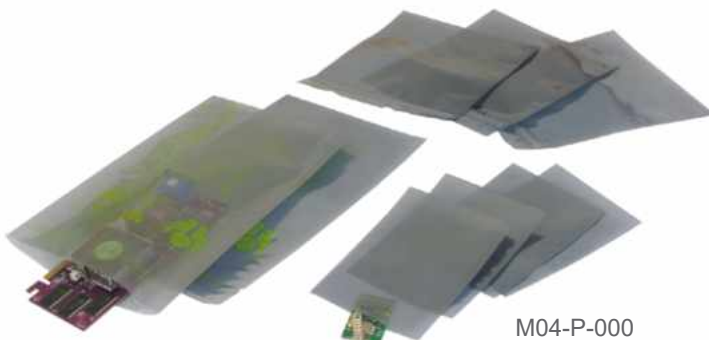
SSB is manufactured by depositing a thin metal coating, like aluminum over an antistatic polyester film substrate. This metalized layer protects the devices or the components in the bag from electrostatic fields.

According to the position of the metalized layer, there are two types of static shielding bags, "Metal-In" and "Metal-Out", in the market.

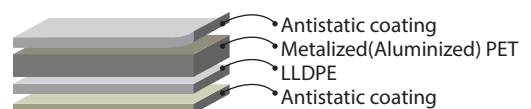
The metal-in bag or buried metal shielding bag is the most commonly used and recommended for packaging of static-sensitive components. It also tends to be superior to the metal-out bag in durability and cost.

The metal-out shielding bag also protects the devices in the bag against static-induced damage. As the metal layer is closer to the outside surface, this bag has lower ESD reading than the metal-in bag, which can be important in some applications.

Our SSB is the metal-in type, which has the metalized layer inside.



Thickness: 55~200 μm (Common: 75 μm)
Maximum width: 1,250mm
S/R: 10e9~10e11 ohm



• Conductive Black PE Bag(CBPB)



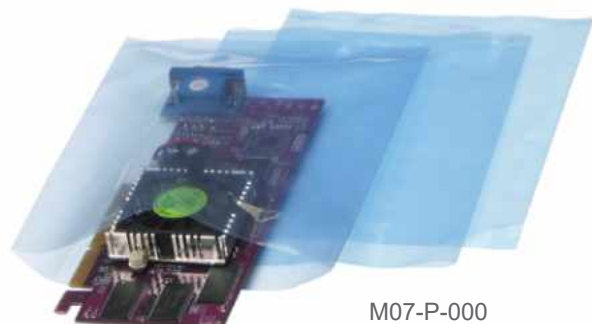
- Cost-effective bag
- Low surface resistance

Thickness: 40~200 μm (Common: 80 μm , 100 μm)
Maximum width: 700mm
S/R: 10e3-10e6 ohm



9 Packaging Bags and Film

• Antistatic PE Bag(APB)



- Cost-effective bag
- Suitable for less sensitive components for ESD
- Color: Pink, Blue, etc.

Thickness: 40~200 μm (Common: 50 μm , 80 μm)
Maximum width: 1000mm
S/R: 10e9-10e11 ohm



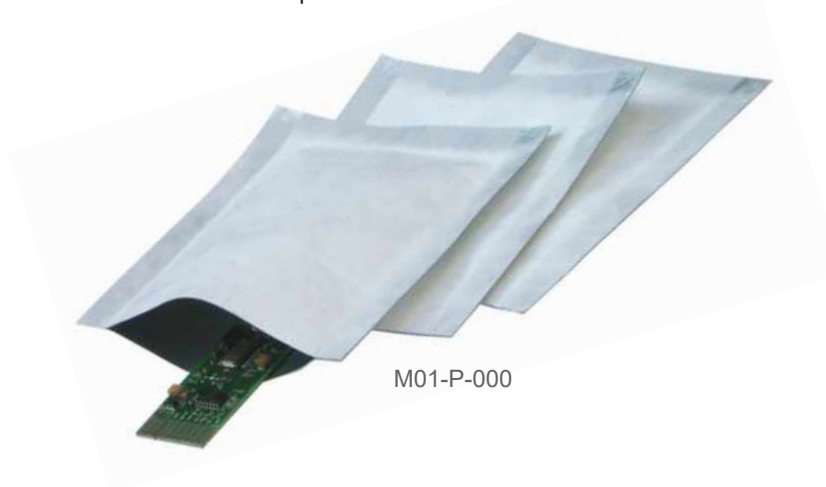
• Moisture Barrier Bag(MBB)

It is essential to keep Surface-Mount Devices (SMDs) dry from manufacturing point to the time of reflow soldering. Moisture Barrier Bag, also known as Vapor Barrier Bag, is made by multiple layers of plastic and aluminum that control moisture vapor leakage.

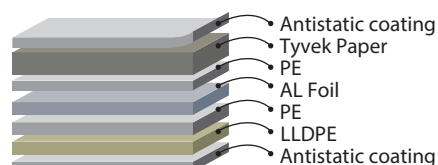
Basically, there are 3 kinds of Moisture Barrier Bags (MBBs), Tyvek MBB, AMBB and ANMBB, in the the market. The key factor of moisture barrier function of the bag is a metal layer, like thickness of the foil layer, foil or metalized, etc., but thickness or material of other layers will partially affect the quality of MBB as well.

Tyvek Moisture Barrier Bag(Tyvek MBB)

Tyvek MBB is ideal for moisture sensitive devices or components, and especially is suitable for sharp-shape components thanks to its excellent puncture resistance.



Thickness: 307 μm , 247 μm
MVTR*: < 0.02 g/100 sqinch/24h

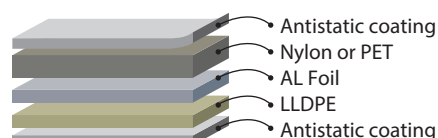


Aluminum Moisture Barrier Bag(AMBB)

AMBB is a good choice for moisture sensitive devices and components. Depending on the products stored in the bag and the periods of storage, you have several selections on AMBB by adjusting the total thickness of the bag, the thickness of AL foil layer, etc.



Thickness: 62~200 μm (Common: 100 μm , 150 μm)
Maximum width: 1,250mm
MVTR*: < 0.02 g/100 sqinch/24h



9 Packaging Bags and Film

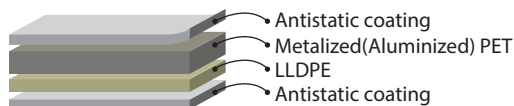
Aluminized Moisture Barrier Bag(ANMBB)

ANMBB is a new technology for barrier materials, which reduces material cost. Aluminum is vapor-deposited onto polyester film or nylon film. This cost effective bag comparing to AMBB is suitable for medium to short term dry-packaging users.



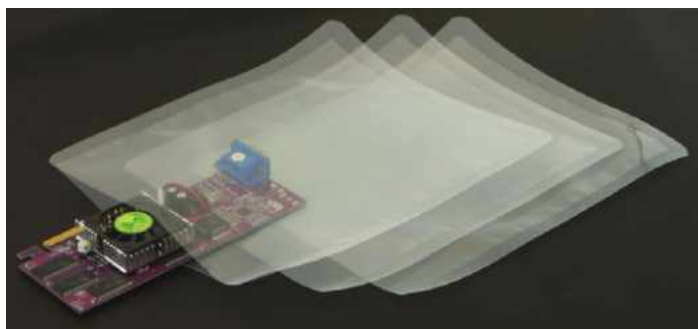
M03-P-000

Thickness: 62~200 μ m (Common: 90 μ m, 100 μ m)
Maximum width: 1,250mm



Transparent Moisture Barrier Bag(TMBB)

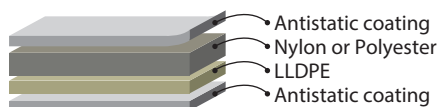
TMBB has no metal layer, but it can be used for less moisture sensitive devices and this bag can be a good choice for foods packing too, which requires clean and vacuum properties.



M05-P-000

- Suitable for less moisture sensitive devices
- Suitable for food industries
- Visible bag inside
- No metal layer, but good moisture resistance and vacuum properties.

Thickness: 62~200 μ m
Maximum width: 1,250mm



● Packaging Film

All types of pre-laminated packaging films, thicknesses and sizes are available.



Item code	Product	Width(mm)	Length/roll(m)	Thickness(μ m)
M08-P-000	Film for TyvekMBB	200~900	1000	247-307
M09-P-000	Film for AMBB	200~1200	1000	62-200
M10-P-000	Film for ANMBB	200~1200	1000	62-200
M11-P-000	Film for SSB	200~1500	1000	55-200
M17-P-000	Film for TMBB	200~1200	1000	62-200
M12-P-000	Film for CBPB	50~700	1000	40-200
M13-P-000	Film for APB	50~1000	1000	40-200

*Thickness units

Mil - 0.001 inch, ex) 3 mils = 0.003 x 25.4mm = 0.0762mm = 76.2 microns
Micron - 1/1,000,000m (1/1,000mm = 0.001mm), ex.) 100 microns = 100/25.4 = 3.93mils
MM - 0.15mm = 150 microns

*MVTR

The Moisture Vapor Transmission Rate (MVTR) is the rate that water vapor passes through a specific area of barrier material. MVTR is measured in grams of water vapor per 100 square inches of barrier per 24 hours (g/100 in.2/24 h).

EIA 583 Packaging Material Standards for Moisture-Sensitive Items defines a Class 1 barrier as having an MVTR of <0.02 g/100 in.2/24 h. A Class 2 barrier is set at <0.08 g/100 in.2/24 h.

9 Packaging Bags and Film

• Humidity Indicator Card(HIC)

HIC allows fast visual inspection of the Relative Humidity(RH) in sealed packaging and containers. As the humidity increases, the chemically impregnated spots will be changed traditionally from blue through lavender to pink(Cobalt-HIC), blue to pink(CDF-HIC), brown to green(CB-HIC), yellow to green(CF-HIC) and green to violet(MF1-HIC). Our HICs have 3 spots or 6spots, but we also have a one spot type. It contains 3 spots, but only one spot is chemically impregnated and other two spots are just printed with reference colors for "OK" and "NG"(not good) so that user can easily check if it is failed or passed according to acceptable preset limit(ex. Semiconductor -10% RH, PCB/LED – 30% RH, etc.) in each industry.

We also have a plug type in round shape different from most other square designs in the market. Especially, if we use it with a specially designed plug case, it will be easy and effective to check the humidity conditions inside of the bags without opening if we use it with a specially designed plug case.

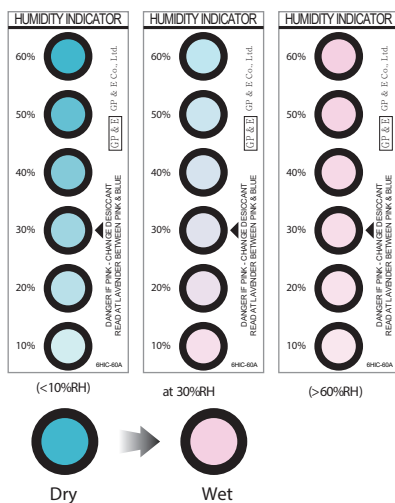
Most recently, we have developed a twin type, which is another innovative and unique concept, to absorb price-oriented customers. As you can cut each HIC into two by simply folding the card a couple of times and tearing it along pre-cut dot lines.

Features

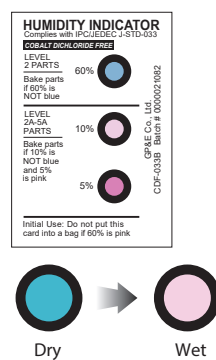
- Eco-friendly products
- Various types and designs(custom sizes and designs are also available on request)
- Meet MIL-I-8835A&IPC/JEDEC J-STD-033B.1
- Indication of warning point(option)

Standard type(3 spots, 6 spots)

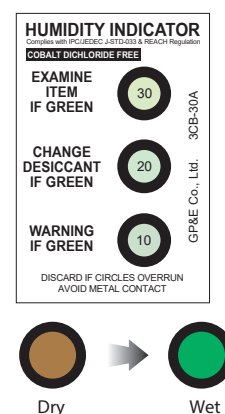
Cobalt HIC



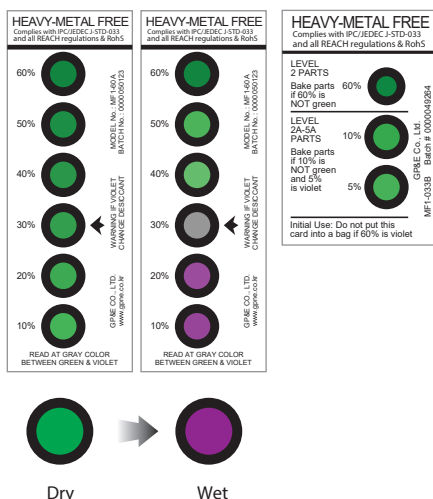
CDF(Cobalt Dichloride Free)-HIC



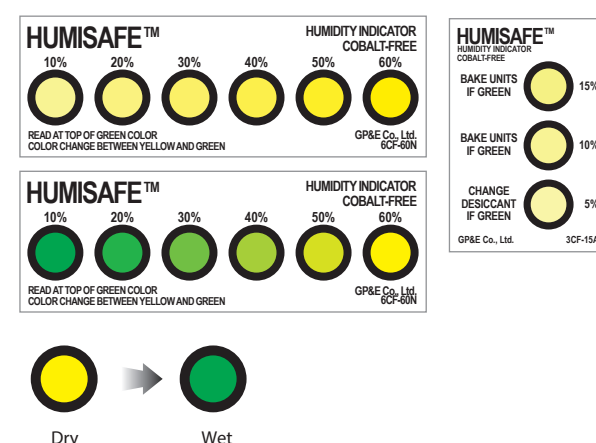
CB-HIC



Metal Free(MF) HIC

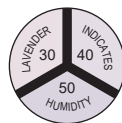
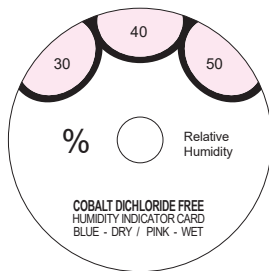


Cobalt Free(CF) HIC

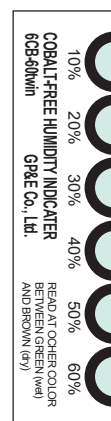
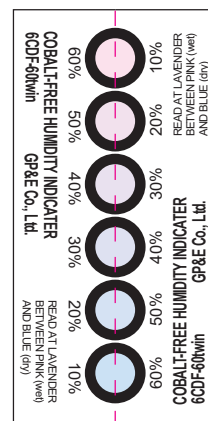


	Color Change	Cobalt Dichloride Free (CDF)	Cobalt Free (CF)	Heavy Metal Free (HMF)	Size		Indications		Packing	
					3spots	6spots	3spots	6spots	3spots	6spots
Cobalt-HIC	Blue-Pink				50x75mm 17 x 51mm 33 x 59mm	40 x 119mm 40 x 116mm 34 x 116mm	5-10-15% 30-40-50% 5-10-60%	10~60%	125pc/tin or AMBB, 40tins or AMBBs / carton	200pc/tin or AMBB, 20tins or AMBBs / carton
CDF-HIC	Blue-Pink	0								
CB-HIC	Brown-Green	0	0							
CF-HIC	Yellow-Green	0	0	0						
MF1-HIC	Green-Violet	0	0	0						

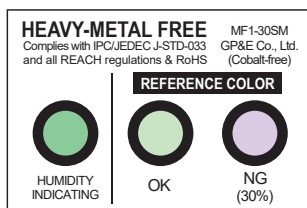
Round type



Twin type



One spot type



- ① Moisture Barrier Bag
② Humidity Indicator Card (HIC)
③ Desiccant

● Desiccant

	Dry-PAK	Ultra Dry-PAK	Silica-Gel
Material	Diatomite	Bentonite(Clay)	Silica-gel
Packing	Non-woven+ Paper	Non-woven + Paper	OPP, Paper, Tyvek, Non-woven
Unit	5, 10, 20, 25, 30, 100, 200, 500, 1000g	50g	5, 10, 20, 30, 50, 100g

10 Walls & Partitions

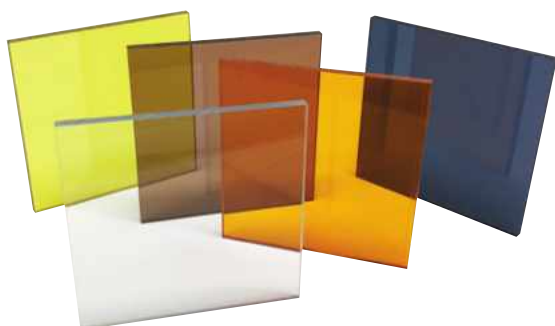
• Polstar Static Dissipative Plate

Polstar Static Dissipative Plate (PSDP) is made of clear plastic sheet coated on both sides providing semi-permanent surface resistance of $<10e9$ ohm, which will help to eliminate static electricity effectively. PSDP is ideal for the speedy decay of static charge without the creation of harmful arcing to the surface of vulnerable components. PSDP satisfies electrical and optical requirements providing superior abrasion, non-scratchable surface and chemical resistance.

PSDP is available with Polycarbonate (high temperature performance, fire resistance and outstanding impact resistance), PMMA (strong surface hardness and optimum clarity), PVC (good chemical resistance) and Aluminum Composition Panel to meet wide applications in each industry.

The new designed PSDP series are also applicable for the special applications of bending and bonding (Polycarbonate is not suitable for the bonding applications) without any crack on the surface and changing the surface resistance after bending.

PSDP is made in Korea. Its manufacturing site and R&D Center are located in Korea as well, those are certified to ISO 9001, Quality Management System and ISO 14001, Environmental Management System. We also have facilities for product development, technical service and quality monitoring and after-sales service.



10 Walls & Partitions

Specifications & Products Information

Properties	Testing Item	Unit	PC (Polycarbonate)	PMMA (Acrylic)	PVC (Polyvinyl Chloride)	A L (Aluminum)	Test Method
Physical Properties	Specific Gravity	g/cm ²	1.2	1.19	1.4	1.38	ASTM D-792
	Water Absorption	%	0.1	0.3	0.01	-	ASTM D-570
	Pencil Hardness	-	HB	3H~5H	3H	3H~5H	JIS K-5400
	Piece Close Adhesion Strength	-	100/100	100/100	100/100	100/100	JIS K-5400
Mechanical Properties	Tensile Strength	Mpa (kgf/cm ²)	58.8~68.6 600~700	560~670	650	8.5	ASTM D-638
	Elongation	%	90~140	2.0~7.0	20	27	ASTM D-638
	Flexural Strength	kgf/cm ²	920~980	840~1200	920	1344	ASTM D-790
	Flexural Modulus of Elasticity	kgf/cm ²	2500	2.6 x 10 ⁴ ~ 3.2 x 10 ⁴	2.6 x 10 ⁴	3746	ASTM D-256
	Compressive Strength	Jkgf/cm ²	-	-	1142	-	ASTM D-256
	Izod Shock Strength	J/M (kgf cm/cm ²)	6	2	6	-	ASTM D-256
Thermal Properties	Burning Resistance	-	Incombustibility V-0 ~ V2	Incombustibility HB	Incombustibility V-0	Incombustibility V-0	UL-94
	Coefficient of Linear Thermal Expansion	X10 ⁻⁵ in/in °F	3.8	-	-	-	ASTM D-696
	Heat Deflection Temp.	°F/°C at 264psi	270/132	-	-	-	ASTM D-648
	Vicat Softening Temp.	°F/°C	310/154	-	-	-	ASTM D-3418
	Max Operation Temp.	°F/°C	170/77	-	-	-	-
	Thermal Conductivity	BTU-in/ft2-hr-°F X10 ⁻⁴ cal/in/cm-sec-°C	1.3 4.5	-	-	-	ASTM D-177
Electrical Properties	Surface Resistance	ohm	< 10e9	< 10e9	< 10e9	< 10e9	ASTM D-257
	Static Decay Time	Sec	Below 0.1	Below 0.1	Below 0.1	Below 0.1	MIL B-81705 B
Size	-	mm	1,000 x 2,000 / 1,200 X 2,400				
Thickness	-	mm	2.0 / 3.0 / 4.0 / 5.0 / 6.0 / 8.0 / 10.0				
Color	-	Clear transparent, Yellow, Orange, Blue, Brown, Smoke, Opaque in black or Ivory					
Remark	Other sizes, thicknesses and colors are also available upon request.						

Maintenance, Handling, Caution

- Recommendable storage conditions: less than 30°C, RH 40 - 60%.
- To avoid scratches on the surface, remove the protective film after PSDP has been machined.
- It is recommendable to have trials with test specimen to determine optimum settings before cutting or modification.
- Static dissipative coating must be removed from the surface to be glued.
- Isopropyl Alcohol (IPA) or alcohol based cleaning liquid is recommendable for cleaning.
- PSDP is not required to be cleaned with antistatic plastic cleaners.
- Loss of static dissipative performance will occur if excess scratching is concentrated in a particular area.
- If PSDP is treated with a polishing machine, the performance of static dissipative coating cannot be guaranteed.

10 Walls & Partitions

Polstar Static Dissipative Plate (PSDP) series are widely used in the following applications

- Cleanroom manufacturing area
- Semiconductor and Electronics / TFT / LCD manufacturing area and equipment
- Pharmaceutical and Biomedical processing areas
- Food processing area
- Explosive manufacturing areas
- Aerospace / Automobile related area
- Equipment viewing windows and doors
- Equipment enclosures and covers
- IC chip conveyor systems
- Dot placement machine
- Stencil printing machine
- Wafer handling equipment
- Desiccator cabinets
- Transport boxes
- Perimeter glazing
- Transparent room partitions
- Glazing panels for mini-environment and pass-thru units
- Laminar flow applications
- Portable cleanroom panels
- Ceiling panels
- Mini-environment panels
- Microbiology filling table covers
- Sterile filling station panels
- Barrier system panels
- Insulator unit covers
- Machinery guards
- Separator panels
- Templates



10 Walls & Partitions

● Polstar PVC Curtain Film

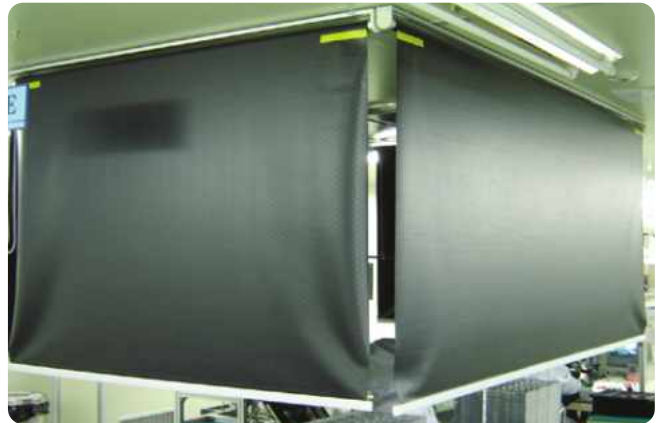
Polstar PVC Curtain Film is flexible transparent film with ESD control properties, which is made of durable PVC (PolyVinyl Chloride). This soft PVC film is easily jointed by high frequency welding. Its ESD control properties, that generate much less friction electrostatic charge, last long until worn-out. Polstar PVC Curtain Film is widely used as flexible partitions, softwalls, door curtains, covers for equipment, portable windows, etc. in many areas, such as Cleanrooms, laboratories, inspection, assembly, electronics, printing, painting, precision tooling, pharmaceutical, medical, food processing and so on.

Features

- Antistatic, static dissipative or conductive
- Extremely low electrostatic generation
- Dust and particles are not accumulated
- Clear transparent for good visibility
- Not tore easily, durable and long lasting
- Flexible and soft for efficient production
- Conductive print are not removed easily
- Various thicknesses and sizes are available
- Individual carton packing in roll
- OEM brand can be printed on request

Applications

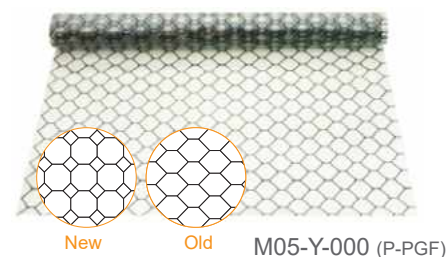
- Door strip, softwall, partition, curtain in Cleanroom
- Portable window and partition
- Precision equipment and machine cover
- Shielding and blocking partition
- Reduction of noise
- Protection from insects
- Screen door or window
- Reinforcement of existing window or partition
- Reduction of harmful ultra violet ray
- Other applications to control electrostatic problem



10 Walls & Partitions

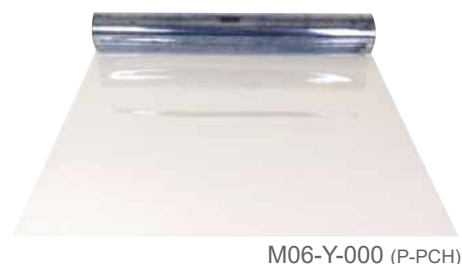
P-PGF (Polstar-PVC Grid Curtain Film)

Specially formulated conductive carbon printed on normal transparent PVC film in grid. The Surface resistance of the conductive carbon print is 10^4 - 10^6 ohms. This model is the most widely used thanks to its economical cost.



P-PCH (Polstar-PVC Clear Curtain Film, Homogeneous Type)

Homogeneous type of antistatic transparent PVC film is made of antistatic compounded PVC, not antistatic coated material. This homogeneous PVC film is all antistatic on both sides and its ESD control properties remain permanent. This shows volume resistivity as well as surface resistivity because of homogeneous antistatic constitution. The surface resistance is 10^8 - 10^{10} ohms and the volume resistance is 10^7 - 10^8 ohm.



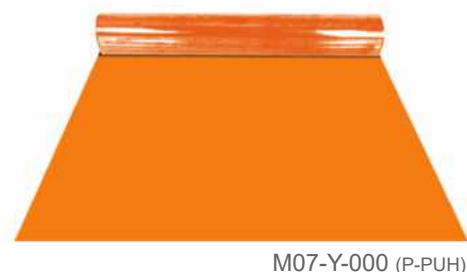
P-PGB (Polstar-PVC Grid Opaque Black Curtain Film)

This is not homogeneous antistatic constitution, but specially formulated conductive carbon printed on black PVC film in grid. The surface resistance of the conductive carbon print is 10^4 - 10^6 ohm and the base film is opaque in black. This is good recommendation for shielding screen effect with conductive ESD control properties.



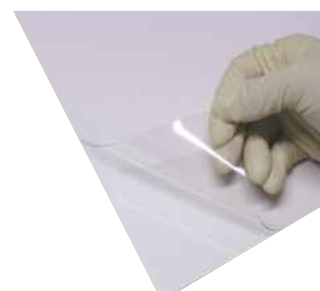
P-PUH (Polstar-PVC UV Clear Curtain Film, Homogeneous Type)

Homogeneous yellow tinted antistatic PVC film for the protection of harmful ultra violet ray. This orange tinted film is UV protection treated and the base film is antistatic of which surface resistance is 10^8 - 10^{10} ohm. This is to absorb ultra violet rays and not to accumulate dust and particle by eliminating of electrostatic.



P-PAH (Polstar-PVC Clear Adhesive Curtain Film, Homogeneous Type)

This homogeneous antistatic transparent film has adhesive layer. After removing of the protection film, this can be adhered to any insulated walls, windows, partitions or other materials that might have problem of ESD control. This homogeneous antistatic transparent film reduces higher electrostatic generation and protects from accumulation of dust and particles.



P-PBH (Polstar-PVC Opaque Black Curtain Film, Homogeneous Type)

Homogeneous black antistatic film. This is opaque type in black for shielding screen effect. The surface resistance is 10^8 - 10^{10} ohm. This is mainly for the application of visual protection.

P-PGG (Polstar-PVC Grid Opaque Black Curtain Film, Both sides)

Specially formulated conductive carbon printed on both sides of black PVC film in grid. The surface resistance of the conductive carbon print is 10^4 - 10^6 ohm on both sides and the base film is opaque in black.

10 Walls & Partitions

Electrical Properties								
ITEM		P-PCH P-PBH P-PAH P-PSF	P-PUH	P-PGF	P-PGB	P-PGG	Unit	Test Method
DESCRIPTIONS								
Surface Resistance	Front	10 ⁸ ~10 ¹⁰	10 ⁸ ~10 ¹⁰	10 ⁵ ~10 ⁸	10 ⁵ ~10 ⁸	10 ⁵ ~10 ⁸	ohm	ASTM D-257
	Back	10 ⁸ ~10 ¹⁰	10 ⁸ ~10 ¹⁰	> 10 ¹¹	> 10 ¹¹	10 ⁵ ~10 ⁸		
Volume Resistance		10 ⁷ ~10 ⁹	10 ⁷ ~10 ⁹	> 10 ¹¹	> 10 ¹¹	> 10 ¹¹	ohm	ASTM D-257
Friction Electrocharge	Front	< 100	< 100	< 1000	< 1000	< 1000	voltage	Electro Static Field Meter (10times rubbing by cotton, 23° C x 24%RH)
	Back	< 100	< 100	> 1200	> 1200	< 1000		
Decay time	5000V - 500V	< 0.5					sec	MIL-B-81750C
Physical Porperties								
Tensile Strength	MD	1.90	1.90	1.90	1.90	1.90	kg/mm ²	ASTM D-882
	TD	1.90	1.90	1.90	1.90	1.90		
100% Modulus	MD	1.10	1.10	1.10	1.10	1.10		
	TD	1.80	1.80	1.80	1.80	1.80		
Elongation	MD	170	170	170	170	170	%	
	TD	210	210	210	210	210		
UV Transmissivity	UV-H	-	95.50	-	-	-	%	KS K 0850-1999
	UV-B	-	95.40	-	-	-		
	UV-A	-	9.5	-	-	-		
Heat Shrinkage		< 5					%	Internal Method (60° C x 30min in H2O)
Resistance to Chemicals								
Hydrochloric Acid (10%)		○						JIS K-7114 5cm x 5cm Size of Specimen : Dipped for 168hrs.
Sulfuric Acid (10%)		○						
Acetic Acid (5%)		○						
Sodium Hydroxide (10%)		○						
Aqueous Ammonia (10%)		○						
Ethyl Alcohol (50%)		△						
Acetone (95%)		△						
Benzene (95%)		×						
Formalin (95%)		○						
Available Sizes								
Thickness (mm)		0.1, 0.2, 0.25, 0.3, 0.5, 1.0, 2.0 3.0						
Width (cm)		20, 30, 90, 100, 120, 137						
Length (m)		10, 20, 30, 50						

10 Walls & Partitions

• P-PSF (Polstar-Strip Door Curtain Film)

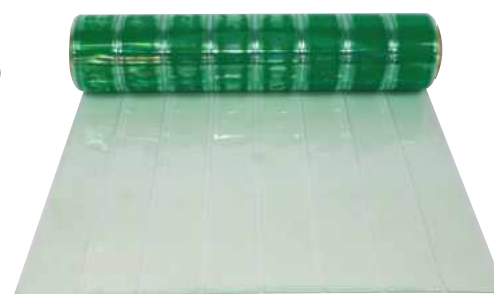
Polstar Strip Door Curtain Film is recommendable to be installed at the gates or the entrances of factories that are frequently opened and closed. It saves energy by keeping the temperature of the factories. It also prevents wind, insects and any foreign materials from coming inside of the factories. General purpose of strip door curtain film, cold resistant strip door curtain film, anti-insect strip door curtain film and anti-static strip door curtain film are available.



M16-Y-000 (P-PSF)

• P-PFF (Polstar ESD Folding Door Film)

Homogeneous antistatic foldable film is suitable to make clean booths, soft partitions, walls, doors, etc. The standard size is 1.35mm(T) x 1000mm(W) x 12m(L) and there are 8 folding lines in 1000mm width all the way to the length direction. Two colors, greenish clear and yellowish clear, are available.



M21-Y-000 (P-PFF)

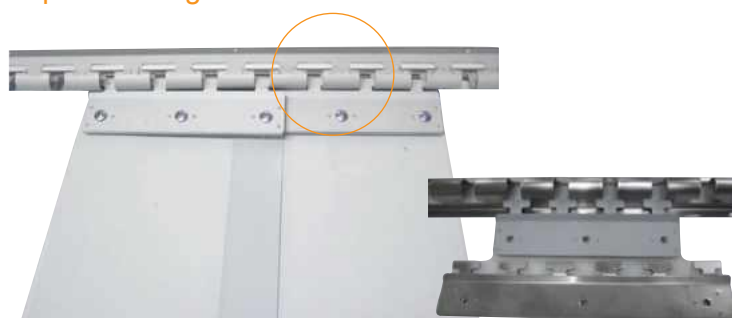
• Accessories for P-PSF

Strip Door Frame



M18-Y-004

Strip Door Hanger



M18-Y-005

• Accessories for P-PFF

Folding Door Rail



M18-Y-001

Folding Door Hanger



M18-Y-003

Folding Door Runner



M18-Y-002

10 Walls & Partitions

• Conductive Rope



M14-Y-000

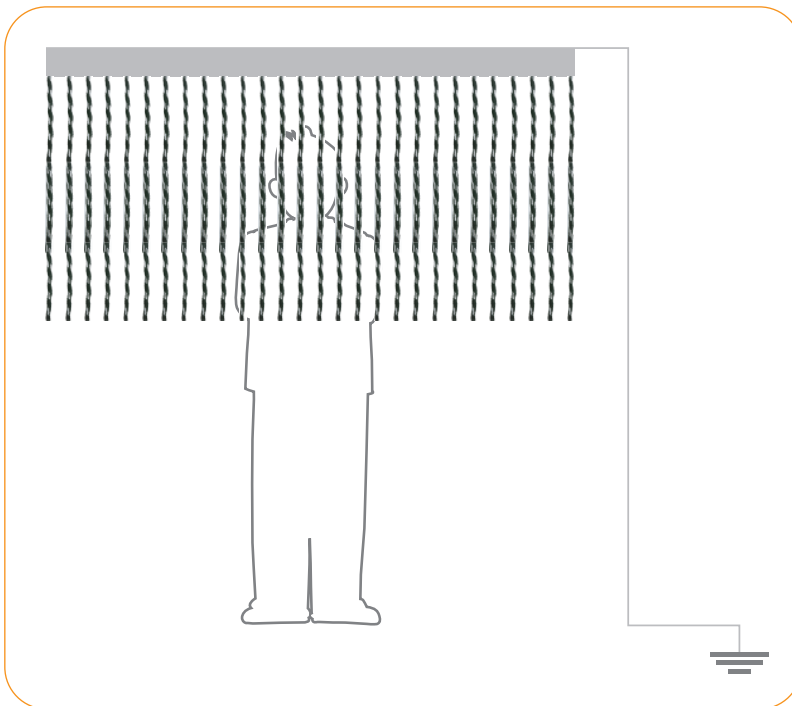


Color: Black & White mixed
Composition: Polypropylene - 93%
Stainless fiber - 7%
Weight: 9 grams/meter
Dia: 7mm
Surface Resistivance: $10e3 \sim 5$ ohm
Packing: 100 yards/hank

This item is designed to make a blind curtain for grounding path of static charges built up on human body and transport equipment. It is quick and easy way to remove the static charges by simple touch of the ropes.

Applications

- Storage of ESD sensitive products.
- Entrance of assembly lines
- EPA area



11 Tapes

● Marking Tapes

Marking Tapes have mainly 3 different kinds, which are ESD Marking Tape, ESD Marking Tape with Printings and ESD Floor Marking Tape. All of them have ESD properties on both adhesive and back sides. They barely generate very low particles by adopting plastic core and lint free film.

Applications

- Indication of "ESD Protected Area", "ESD Controlled Area", "ESD Safe Area"
- Color coding
- Safety Markings

ESD Marking Tape

PVC tape with antistatic treatment on both sides



M03-T-000 (PT-CMT)

Color: Green, Blue, Red, Yellow, White
Surface Resistance: $10e7 \sim 10e9$ ohm
Thickness: $140 \mu m$
Size: 1/2", 1", 3/4", 2", 4" x 33m/roll, 1,000mm x 33m(Jumbo roll)
Packing: 25mm x 33m / 60rls, 50mm x 33m / 30rls



- Antistatic treatment
- PVC($110 \mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($30 \mu m$)

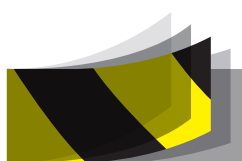
ESD Marking Tape with Printings

PET laminated PVC tape with printings and antistatic treatment on both sides



M04-T-000 (PT-CMP)

Color: Green, Blue, Red, Yellow, White, Black&Yellow
Surface Resistance: $10e7 \sim 10e9$ ohm
Thickness: $145 \mu m$
Size: 1/2", 1", 3/4", 2", 4" x 33m/roll, 1,000mm x 33m(Jumbo roll)
Packing: 25mm x 33m / 60rls, 50mm x 33m / 30rls



- Antistatic treatment
- PET($15 \mu m$)
- ESD logo printed PVC ($100 \mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($30 \mu m$)

ESD Floor Marking Tape

PET laminated PVC printed tape with ESD Symbol and "ESD Protected Area"



M05-T-000 (PT-EMT)

Color: Black printing on yellow
Surface Resistance: $10e7 \sim 10e9$ ohm
Thickness: $145 \mu m$
Size: 50mm x 33m/roll
Packing: 50mm x 33m / 30rls



- Antistatic treatment
- PET Film($15 \mu m$)
- Printed PVC Film (ESD symbol and "ESD Protected Area") ($100 \mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($30 \mu m$)

11 Tapes

• ESD Packing Tapes

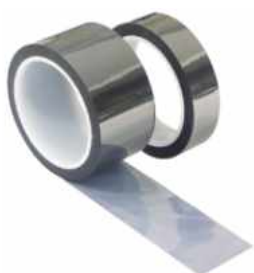
ESD Packing Tapes were developed to protect static sensitive products from static electricity generated by triboelectricity when they are unrolled or removed from various objects our ESD packing tapes relatively generate very low static voltage while normal tapes generate about over 1KV to 9.5KV to 14KV under the same conditions.

Applications

- Bundle of DIP IC Tube
- Seal Static Shielding Bag
- Pack Conductive IC Tray
- Pack Wafer Carrier
- Attach a Note in Cleanroom
- EMI Shielding
- Holes or Connector Pins
- Covers for External Plugs

Antistatic Utility Tape(Standard)

Metallized PET film with antistatic acrylic adhesive



M01-T-000 (NAT-801)

Surface Resistance: $10e7 \sim 10e9$, Back- $10e11 \sim 10e12$ ohm
 Thickness: $50\mu m$
 Size: 1/2", 1", 3/4", 2" x 50m/roll, 1200mm x 50m(Jumbo roll)
 Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Metalized PET($25\mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($25\mu m$)

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Tapes

Antistatic Utility Tape(ESD on both Sides)

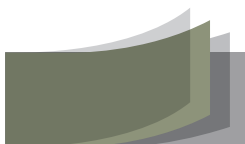
Metallized PET film with antistatic acrylic adhesive



NEW

M35-T-000 (NAT-801)

Surface Resistance: $10e7 \sim 10e9$, Back- $10e7 \sim 10e9$ ohm
 Thickness: $50\mu m$
 Size: 1/2", 1", 3/4", 2" x 50m/roll, 1200mm x 50m, 100m(Jumbo roll)
 Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Antistatic treatment
- Metalized PET($25\mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($25\mu m$)

Antistatic Utility Tape(Standard/Halogen free)

Metallized PET film with antistatic acrylic adhesive



NEW

M38-T-000 (NAT-801)

Surface Resistance: $10e7 \sim 10e9$, Back- $10e11 \sim 10e12$ ohm
 Thickness: $50\mu m$
 Size: 1/2", 1", 3/4", 2" x 50m/roll, 1200mm x 50m(Jumbo roll)
 Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Metalized PET($25\mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($25\mu m$)

Antistatic Utility Tape(ESD on both Sides/Halogen free)

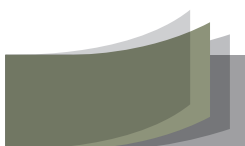
Metallized PET film with antistatic acrylic adhesive



NEW

M39-T-000 (NAT-801)

Surface Resistance: $10e7 \sim 10e9$, Back- $10e7 \sim 10e9$ ohm
 Thickness: $50\mu m$
 Size: 1/2", 1", 3/4", 2" x 50m/roll, 1200mm x 50m, 100m(Jumbo roll)
 Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls

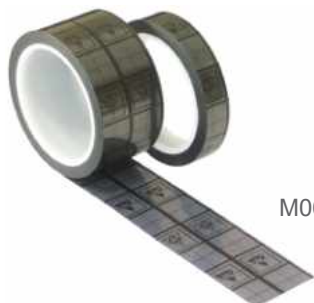


- Antistatic treatment
- Metalized PET($25\mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($25\mu m$)

11 Tapes

Antistatic Grid Tape

Metallized PET film with ESD symbol and carbon grid printing



M06-T-000 (PT-CGT)

Surface Resistance: $10e7 \sim 10e9$, Back- $10e8 \sim 10e9$ ohm
Thickness: $50 \mu m$
Size: 1/2", 1", 3/4", 2", x 50m/roll, 1000mm x 50m(Jumbo roll)
Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Carbon Printing
- Metalized PET($25 \mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($25 \mu m$)

ESD Control Tape

Cellulose based synthetic film with antistatic acrylic adhesive



M02-T-000 (NAT-803)

Surface Resistance: $10e8 \sim 10e9$, Back- $10e10 \sim 10e11$ ohm
Thickness: $55 \mu m$
Size: 1", 2", x 50m/roll, 600mm x 50m(Jumbo roll)
Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Cellulose film ($30 \mu m$)
- Antistatic acrylic adhesive($25 \mu m$)

ESD Control Tape with Printings

Cellulose based synthetic film with antistatic acrylic adhesive & ESD logo printings



M26-T-000

Surface Resistance: $10e8 \sim 10e9$, Back- $10e10 \sim 10e11$ ohm
Thickness: $55 \mu m$
Size: 1", 2", x 50m/roll, 600mm x 50m(Jumbo roll)
Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rolls



- Cellulose film ($30 \mu m$)
- Antistatic acrylic adhesive($25 \mu m$)

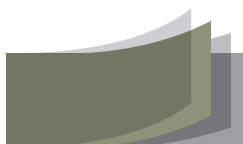
Antistatic Clear Tape

Antistatic transparent PET film with antistatic acrylic adhesive



M07-T-000 (PT-EPT)

Surface Resistance: $10e8 \sim 10e9$, Back- $10e7 \sim 10e8$ ohm
Thickness: $55 \mu m \pm 5$
Size: 1/2", 1", 3/4", 2", x 50m/roll, 1000mm x 50m(Jumbo roll)
Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Antistatic treatment
- PET film ($25 \mu m$)
- Antistatic treatment
- Antistatic acrylic adhesive($30 \mu m$)

11 Tapes

Antistatic OPP Tape

Antistatic treated OPP film tape with rubber adhesive



Features

- Keep semi-permanent antistatic properties
- Strong adhesive power
- Environment friendly material

Surface Resistance: $10^{11} \sim 10^{12}$, Back- $10^7 \sim 10^{10}$ ohm

Thickness: 67 ± 5 (Film: 40um)

Size: 1", 2", x 50m/roll, 1000mm x 50m (Jumbo roll)

Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Antistatic treatment
- OPP (40 μ m)
- Antistatic rubber adhesive(20 μ m)

Antistatic OPP Tape with Printings

Antistatic treated ESD logo printed OPP tape with rubber adhesive



Features

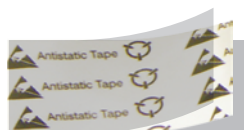
- Keep semi-permanent antistatic properties
- Strong adhesive power
- Environment friendly material

Surface Resistance: $10^9 \sim 10^{11}$, Back- $10^9 \sim 10^{11}$ ohm

Thickness: 67 ± 5 (Film: 40um)

Size: 1", 2", x 50m/roll, 1000mm x 50m (Jumbo roll)

Packing: 25mm x 50m / 100rls, 50mm x 50m / 50rls



- Antistatic treatment
- ESD Logo printed OPP (40 μ m)
- Antistatic rubber adhesive(27 μ m)

● Peeling Tape



Features

- Special purpose tape for peeling back grinding tapes for wafer
- Suitable for peeling of back grinding tape without damaging wafer
- Excellent peeling ability
- Two kinds of peeling tapes: rubber adhesive and hot melt adhesive types

Properties	Unit	PT-SHH	PT-ELH	PT-PRU
Film material	-	PET	PET	PET
Adhesive	-	Hot melt type	Hot melt type	Rubber adhesive
Film Thickness	μ m	25	50	50
Adhesive Thickness	μ m	50	50	30
Total Thickness	μ m	75	100	80
Adhesion	gf/25mm	2000	2200	2200
Applications	-	PE, PP B/G tape	EVA B/G tape	PE, PP B/G tape
Construction		PET film	PET film	PET film
		Primer	Primer	Rubber adhesive
		Hot melt Adhesive	Hot melt Adhesive	
Heat seal temperature	$^{\circ}$ C	180~200	235	-
Heat seal pressure	kg/cm ²	1~3	1~3	-
Heat seal time	sec	1~3	1~3	-
Size		25, 50, 75mm x 200m(or 300m)	25, 50, 75mm x 200m	25, 50, 75mm x 100m

11 Tapes

• Masking Tapes

HT PET Masking Tape

High temperature PET film with silicone adhesive



M12-T-000 (PT-PMT)

PET Masking Tape

PET film with silicone adhesive coating



M18-T-000 (PT-PST)

Polyimide Tape



M17-T-000 (PT-PIT)

Antistatic Polyimide Tape

Polyimide film with thermal resistant silicone adhesive



M13-T-000 (PT-APT)

Features

- Heat resistance: 200°C

Applications

- Suitable for using as flash breaker tape in the Aerospace Industry
- Photo splicing tape for attaching film to Leader Card on all automatic photo developing and printing machine.

Color: Green

Thickness: 90 μ m

Size: 10mm, 20mm, 25mm, 50mm x 33, 50m/roll,
750(710)mm x 33m / 1080(1040)mm(Jumbo roll)

Packing: 25mm x 33m / 60rls, 50mm x 33m / 30rls



- High temperature PET film (50 μ m)
- Silicone adhesive(40 μ m)

Features

- Heat resistance: 180°C

Applications

- JIG, PCB fixation
- Protect components or devices from foreign substances during SMT process.

Thickness: 65 μ m

Color: Red, Green

Size: 10mm, 20mm, 25mm, 50mm X 50m/roll,
1080(1040)mm / 750(710)mm x 50m(Jumbo roll)

Packing: 25mm x 50m / 60rls, 50mm x 50m / 30rls



- PET film (25 μ m)
- Silicone adhesive(40 μ m)

Features

- Heat resistance: 250°C
- High Temperature Range
- No Migration /High Tack adhesive

Thickness: 65 μ m

Size: 10mm, 20mm, 25mm, 50mm x 33m/roll, 1000mm x 33m(Jumbo roll)

Packing: 25mm x 33m / 100rls, 50mm x 33m / 50rls



- Polyimide film(25 μ m)
- Silicone adhesive(40 μ m)

Features

- Heat resistance: 250°C
- Flame retardant
- Excellent heat, solvent and chemical resistance

Applications

- Masking PCB during wave soldering or solder dip process

Surface Resistance(Back side): 10e5~10e8 ohm

Thickness: 65 μ m

Size: 10mm, 20mm, 25mm, 50mm x 33m/roll, 1000mm x 33m(Jumbo roll)

Packing: 25mm x 33m / 60rls, 50mm x 33m / 30rls



- Antistatic treatment
- Polyimide film(25 μ m)
- Silicone adhesive(40 μ m)

11 Tapes

• Double Side Tapes

Double Side PI Tape

Polyimide film with double side coating with thermal resistant silicone adhesive



M19-T-000 (PT-SDP)

Features

- Heat resistance: 250°C
- Excellent heat, solvent and chemical resistance

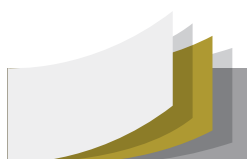
Applications

- Fixing electric parts and components

Thickness: 100 μ m

Size: 10mm, 20mm, 25mm x 5 or 10m/roll, 520(490)mm x 5 or 10m(Jumbo roll)

Packing: 25mm x 5 or 10m / 60rls, 50mm x 5 or 10m / 30rls



- PET liner
- Silicone adhesive(40 μ m)
- Polyimide film(25 μ m)
- Silicone adhesive(35 μ m)
- PET liner

Antistatic Double Side Tape

Antistatic treated PET film with double side acrylic adhesive coating



M16-T-000 (PT-ADT)



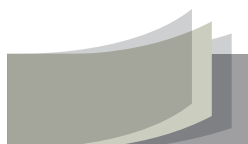
- Antistatic acrylic adhesive(35 μ m)
- Antistatic treatment
- PET film(25 μ m)
- Antistatic treatment
- Antistatic acrylic adhesive(35 μ m)
- Paper liner(120 μ m)
- Size 25, 50mm x 50mm

Double Side Non-Woven Tape

Non-woven fabric with double side acrylic adhesive coating



M15-T-000 (PT-DNW)



- Acrylic adhesive(30 μ m)
- Non-woven fabric(40 μ m)
- Acrylic adhesive(30 μ m)
- Paper Liner(120 μ m)
- Size 25, 50mm x 50mm

Double Side PET Tape

PET film with double side acrylic adhesive coating



M14-T-000 (PT-DPT)



- Acrylic adhesive(20 μ m)
- PET film(15 μ m)
- Acrylic adhesive(20 μ m)
- Paper Liner(120 μ m)
- Size 25, 50mm x 50mm

Features

- Bonding jobs in wide range of temperatures and with various foam materials including embossed plastic surface.
- Stable adhesive strength to various materials, like metal, plastics, etc.

11 Tapes

● Aluminum Tape

Aluminum Foil, one face coated with acrylic based adhesive



M25-T-000

Features

- Temperature range: 5~125 degree C.

Applications

- Radiation of heat for home appliances

Color: Silver

Thickness: 60 μ m(AL foil, adhesive) + 130um(releasing paper)

Size: 25mm x 50m / 50mm x 50m / 1080mm x 50m (Jumbo roll)

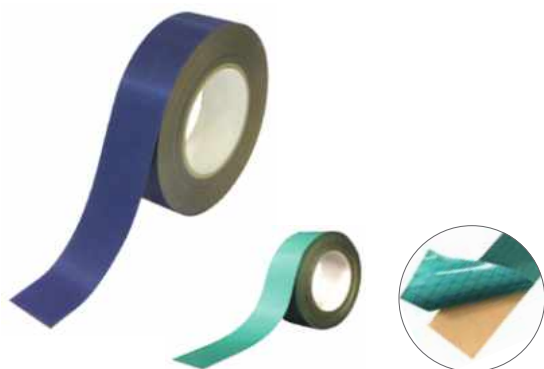
Packing: 25mm x 50m / 40rolls, 50mm x 50m / 20rolls



- Aluminum foil(40 μ m)
- Acrylic adhesive(20 μ m)
- Paper liner(130 μ m)

● ESD Fabric Tape

Conductive 5mm grid fabric with acrylic adhesive



M24-T-000

Features

- ESD properties on both sides
- Soft and flexible
- No lint generation
- No residue
- Homogenous structures

Applications

- Cover for the edges of the ESD EVA Mats, Pad and other Mats

Surface Resistance: 10e6~10e8, Back-10e5~10e7 ohm

Thickness: 200 μ m

Adhesive level(gf/25mm): 900(SUS), 1000(PC)

Size: 40mm x 30m, 1000mm x 20, 50, 100m(Jumbo roll)

Packing: 40rolls/carton



- ESD Fabric(5mm grid)
- Acrylic adhesive
- Releasing paper

● Removal Tape

Transparent PET film with low silicone based adhesive tape



M27-T-000

Features

- Very low removal adhesive
- Excellent wetting property
- Easy to remove and residue free after removal

Applications

- Protect the outer frame of LCD TV, Monitor, etc.

Color: Transparent

Thickness: 50um +/- 4um

Adhesive level(gf/25mm): 30 +/- 10

Holding power(mm/hr): MAX. 0.5

Size: 10mm, 20mm, 25mm, 50mm, etc. x 50m, 960mm x 50m(Jumbo roll)



- PET film(38um)
- Silicone adhesive(12um)

11 Tapes

● Protection Tape

PET film with as acrylic adhesive and liner



M30-T-000

Applications

- Protect TSP(front face) in process

Color: Transparent
Surface resistance: $10e9 \sim 10e11$ ohm
Thickness: 45um
Adhesive level: 5gf/in
Size: 1080(1040)mm x 100 or 200m



- PET(38um)
- AS Acrylic Adhesive(7um)
- White PET Liner(50um)



M31-T-000

Applications

- Protect TSPs(front face) in process

Color: Transparent
Surface resistance: $10e9 \sim 10e11$ ohm
Thickness: 55um
Adhesive level: 25gf/in
Size: 1080(1040)mm x 100 or 200m



- PET(36um) + Antistatic treatment
- Silicone Adhesive(19um)
- White Fluorosilicone Liner(50um)



M32-T-000

Applications

- Protect TSPs(front face) in process

Color: Transparent
Surface resistance: $10e9 \sim 10e11$ ohm
Thickness: 70um
Adhesive level: 5gf/in
Size: 1080(1040)mm x 100 or 200m



- PET(50um)
- AS Acrylic Adhesive(20um)
- Transparent PET Liner(50um)



M34-T-000

Applications

- Protect finished Injection products

Color: White
Surface resistance: $10e9 \sim 10e11$ ohm
Thickness: 45um
Adhesive level: 5gf/in
Size: 1080(1040)mm x 100 or 200m



- PET(38um)
- AS Acrylic Adhesive(7um)
- Transparent PET Liner(75um)



M33-T-000

Applications

- Protect finished TSPs

Color: Transparent
Surface resistance: $10e9 \sim 10e11$ ohm
Thickness: 165 m
Adhesive level: 3gf/in
Size: 1080(1040)mm x 100 or 200m



- PET(128um)
- Antistatic treatment
- Silicone Adhesive(37um)
- Black PET Liner(75um)

12 Equipment & Tools

• Powerless Eco Ionizer

Can you imagine to neutralize the charged insulator with the ionizer without electric power supply?



M39-E-002

All ESD programs should include relative methods for grounding in each work area.

Even though all personnel, worktables and floors are properly grounded, there are still some insulators in the manufacturing sites. So, relevant neutralization for the insulators is essential to maintain the low percentage of errors because insulators are easily charged when they contact other materials even if the other materials are grounded. The charged insulators retain the charges for long periods of time as they can not provide a good pathway for the static charges.

Ionizer is one of the most common and effective equipment to eliminate the charges on insulators in manufacturing areas.

All corona typed ionizers are required electric power and airflow sources to have their own functions. Our Powerless ECO Ionizer, however, is an exception.

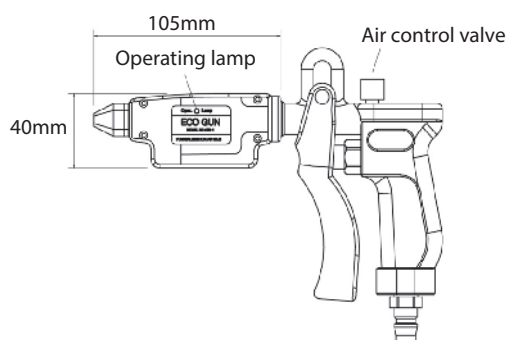
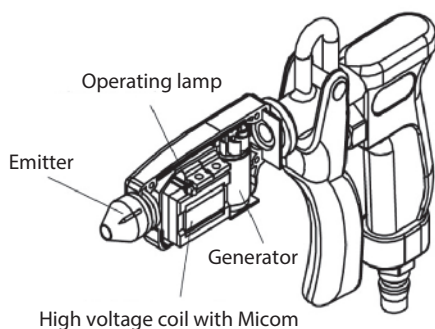
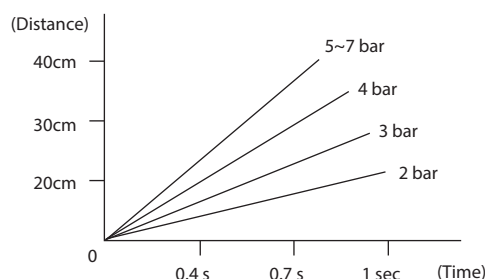
Our high technology based on long experience in this field enables us to develop an innovative Powerless ECO Ionizer, which can be operated without any electric power source.

Operating is just simple. Grip the handy ionizer and trigger the handle, then the air will be distributed in the ionizer, and a special generator mounted in the ionizer will automatically be operated by high pressed air, and it will, then, generate positive and negative ions. When you release the handle, the ionizer will be stopped immediately.

Features

- No need electric power source
- Easy operation
- Easy maintenance
- Excellent performance on neutralization

Category	Descriptions	Remark
Item Code	M39-E-002	
Ion Balance	Within $\pm 10V$	
Ion Mode	AC 14Khz	
Air Pressure	4~7 Bar	
Decay time	0.6 sec.	(+/- 1,000v to 100v)
Effective Distance	10cm~50cm	
Life time	3000~5000 hrs	
Weight	200g	



12 Equipment & Tools

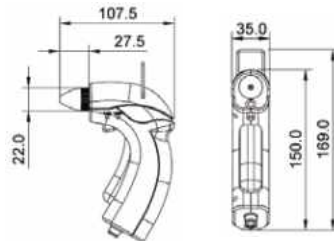
• Ionizing Air Gun



M01-E-009(SIG-30)

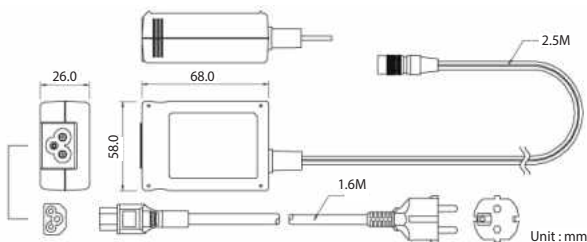
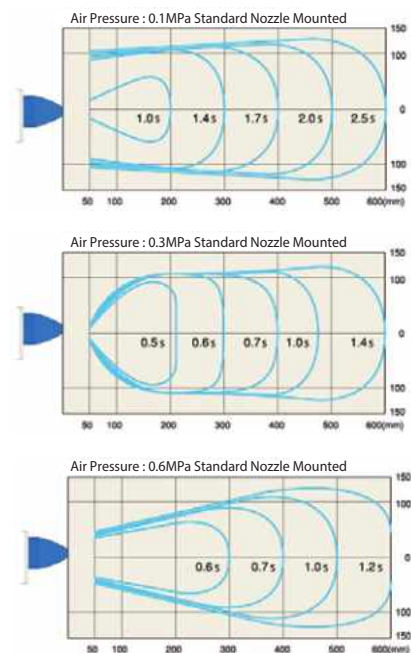
Features

- Ergonomics design
- Particle tracing LED
- Small size & light weight
- Easy connection of tube-fitting (6mm) to select different air settings
- Strongly built cable(150,000 cable bending test)



Specifications

Category	Descriptions		Remark
Model	M01-E-009(SIG-30)		
Input Power	DC 24V		±5%
Power Consumptions	1.8W		Lighting LED
Current Consumption	75mA		DC 24V
Ion-Generation Method	High Frequency AC		
Air purge supply pressure	0.1~0.6MPa (0.4MPa Recommendation)		CDA(Clean Dry Air), N2
Operation Circumstance	5°C~+40°C (41°F~104°F, 35%~65%RH)		NO dewing
Ozone(O3) Concentration	≤0.05ppm		50mm
Operation Distance	50~mm		Non-hazardous locations
Decay Time	Please refer to Ionizer performance tables		
Ion Balance	Within ±10V		0.3MPa, 150mm
Main Body Material	ABS		
Hook Material	Stainless Steel		
Electrode Material	Standard	Tungsten	
	Option	Titanium	
Size	107.5(W) x 150(H) x 35(D)		
Weight	198g		
Alarm Function	H/V Abnormal		Red LED Alarm
Accessory	AC Adaptor		
Warranty	1 year		



Category	Descriptions		Remark
Model	Adapter		
Rated input voltage	AC 100V~240V, 50/60Hz, 0.4A		±5%
Rated output voltage	DC 24V 0.75A		
Operation Circumstance	0°C~+40°C(32°F~104°F), 5%~95%RH		Where no condensation
Code Length	DC Input Cable : 2.5m, AC Output Cable : 1.8M		
Weight	170g		

Basic Component



Body
SIG-30
1ea

Adapter
SAD-1G-1-001
AC 100~240V, 50/60Hz
DC 24V, 0.75A, 2.5m/1ea

Power Cable
SPC-BL-1-001 AC 110V, 50/60Hz, 1.8m, 1ea or
SPC-BL-2-001 AC 220V, 50/60Hz, 1.8m, 1ea

Additional Component



Discharging Needle
SIE-NZ-1-001

Screw Driver
SDR-NZ-1-001
1ea

12 Equipment & Tools



M02-E-029



M02-E-030



M02-E-008

Category	Descriptions		
Item Code	M02-E-029	M02-E-030	M02-E-008
Model No.	SBL-12A	SBL-12B	SBL-15S
Input Power	DC 24V, Adaptor (AC110~220V, 50/60Hz)		
Power Consumptions	7.7W	7.3W	35W
Ion-Generation Method	Steady-State DC		
Air Blow volume	4.25m³/min		4.84m³/min
Noise Level(dB)	62dB(1000m)		
Ion Balance, 600mm, max air flow	Within ± 5V (600mm)		
Ozone(O3) Concentration	≤ 0.05ppm		≤ 0.005ppm
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH		
Weight	1.42kg		2.8kg
Material	EGI		Aluminum/Stainless Steel
Electrode Material	Tungsten(standard) / Titanium(option)		
Mounting Method	Desk Top		
Function	Tip Cleaning, Auto Tip Cleaning		Tip Cleaning, 2 Steps Fan Speed, Ion Balance Display
Alarm Function	Ion Unbalance Alarm, Fan Alarm		Ion Unbalance Alarm
Interface	Remote On/Off, Run State, Alarm, RS485		Remote On/Off, Run State, RS485, Alarm
Option	RMS(Real Monitoring System)		RMS(Real Monitoring System)
Warranty	1 year		



M02-E-021 (IPI-310A)



M02-E-020 (IPI-310S)



M02-E-027 (IPI-310B)

Category	Descriptions				
Item Code	M02-E-021	M02-E-026	M02-E-020	M02-E-027	M02-E-028
Model No.	IPI-310A	IPI-310A(Brush)	IPI-310S	IPI-310B	IPI-322S
Input voltage	DC24V (Adaptor Input voltage AC 75-275V)max., 6Watts			AC75~230V max., 8Watts	AC75~275V, 50/60Hz, 40Watts maximum
Method of ion generation	Steady-State DC				
Ion Generation	adjustable	adjustable	Automatic control	Automatic control	adjustable
Wind velocity	High: 105cfm, Low: 58cfm		High: 48cfm, Low: 30cfm	High: 105cfm, Low: 58cfm	
Ion balance	±5V (in 500mm)	±5V (in 500mm)	±5V (in 300mm)	±5V (in 500mm)	±3V (in 600mm)
Decay time	5 sec.(in 600mm)	3 sec.(in 300mm)	3 sec.(in 300mm)	3 sec.(in 300mm)	5 sec.(in 600mm)
Material(Electrode)	Titanium	Titanium	Titanium	Titanium	Tungsten(99.99%)
Material(Body)	ABS	ABS	SUS	ABS	Aluminum
Size(mm)	157(W) × 54(D) × 210(H)		157(W) × 88(D) × 210(H)	98(W) × 45(D) × 142(H)	430(W) × 169(D) × 70(H)
Weight	1.05kg	1.1kg	1.5kg	570g	2.54kg
Warranty	18 months				

12 Equipment & Tools

CE



M02-E-003 (SBL-20W)

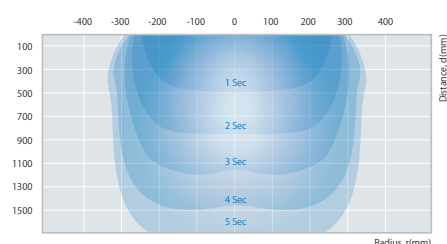
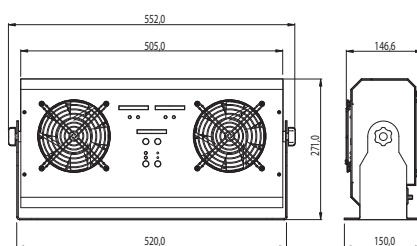
SBL-20W, SBL-30W

- Ion Balance within $\pm 2V$ (at 60cm distance, max. air flow)
- EMI(Electro-Magnetic Interference) and EMS(Electro-Magnetic Susceptibility)
- Automatic tip cleaning function
- Various Interfaces with automated factories(PLC, Computer)
- Ion unbalance alarm
- RMS(Real Monitoring System)
- Remote control
- Ion bar graph
- Wide range and long distance

CE



M02-E-023 (SBL-30W)



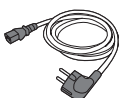
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Equipment & Tools

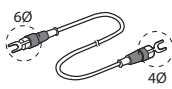
Basic Component



Body
SBL-30W
1ea

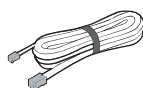


Power Cable
SPC-MT-1-001
AC 100~240V, 50/60Hz
1.8m / 1ea



Ground Cable
SGC-XN-1-001
1m / 6Ø, 4Ø / 1ea

Additional Component



UTP Cable (Option)
SUC-MT-1-001
10m / 1ea



Remote Controller
SBL-RC2
1ea

RMS Controller
Single Cable

Power Extension

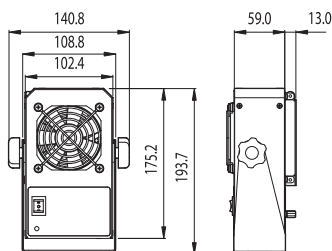
Category	Descriptions	
Item Code	M02-E-003	M02-E-023
Model	SBL-20W	SBL-30W
Input Power	AC100~220V, 50/60Hz	AC100~220V, 50/60Hz
Power Consumption	37W	50W
Ion-Generation Method	Steady-State DC	Steady-State DC
Air Blow volume	8.5m ³ / min	12.44m ³ / min
Noise Level(dB)	63dB	68dB (4Step)
Ion Balance, 600mm, max air flow	Within $\pm 5V$ (600mm)	Within $\pm 5V$
Ozone(O3) Concentration	$\leq 0.005\text{ppm}$	$\leq 0.05\text{ppm}$
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH	
Weight	3.4kg	6.2kg
Material	Aluminum	Aluminum
Electrode Material	Tungsten	Tungsten / Titanium
Mounting Method	Desk Top	Desk Top
Function	Remote Control, 4 Step Fan Speed, Auto Tip Cleaning, Ion Balance Display	Remote Control, 4 Step Fan Speed, Auto Tip Cleaning, Ion Balance Display
Alarm Function	Ion Unbalance Alarm, Fan alarm	Ion Unbalance Alarm, AlarmBuzzer
Interface	Remote On/Off, Run State, Tip Cleaning, Alarm(Ion Unbalance), RS485	
Option	RMS(Real Monitoring System)	
Warranty	1 year	

12 Equipment & Tools

• Miniature Ion Blower



M02-E-004 (SBL-18)



SBL-18/SBL-108



M02-E-005 (SBL-108)



M02-E-009 (SMB-60)

SBL-18, SBL-108

- Ion balance within $\pm 10V$ (SBL-108), $30V$ (SBL-18) (at 60cm distance)
- EMI(Electro-Magnetic Interference) and EMS(Electro-Magnetic Susceptibility)
- Various interfaces with automated factories(PLC, Computer)
- RMS(SBL-108, Option)
- Various input voltages(AC110/220, 50/60Hz, DC24V)
- One touch front fan cover off for tip cleaning

SMB-60

- Ion Balance: within $\pm 20V$
- Ultra slim and light weight
- High Frequency AC type
- Easy maintenance

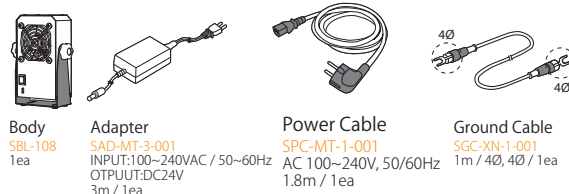
SBL-18

Basic Component



SBL-108

Basic Component



Additional Component



Category	Descriptions		
Item Code	M02-E-004	M02-E-005	M02-E-009
Model	SBL-18	SBL-108	SMB-60
Input Power	AC110/220V, 50/60Hz	Adapter(AC110~240V, 50/60Hz, DC24V)	
Power Consumptions	18W	22W	18W
Ion-Generation Method	DC Type	Steady-State DC	High Frequency AC
Air Blow Volume	1.9m ³ /min	1.9m ³ /min	1.1 m ³ /min
Noise Level(dB)	54dB	54dB	51dB
Ion Balance	Within $\pm 30V$ (600mm)	Within $\pm 10V$ (600mm)	Within $\pm 20V$ (in 200mm)
Ozone(O3) Concentration	≤ 0.005 ppm	≤ 0.005 ppm	≤ 0.005 ppm
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH		
Weight	0.8kg	0.8kg	1.42kg
Material	EGL	EGL	EGL
Electrode Material	Tungsten / Titanium	Tungsten / Titanium	Tungsten / Titanium
Mounting Method	Desk Top	Desk Top	Desk Top
Function	2Steps Fan Speed	2Steps Fan Speed	Volume Fan Speed
Alarm Function		Ion Unbalance Alarm	H/V abnormal Alarm
Interface		Remote On/Off, Run State, RS485, Alarm(Ion Unbalance), Power Input	Alarm(H/V abnormal)
Option		RMS(Real Monitoring System)	-
Warranty	1 year	1 year	1 year

12 Equipment & Tools

• Bench Top Ion Blower(Mini)



Features

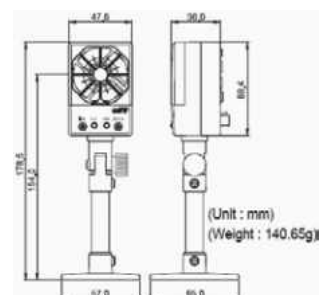
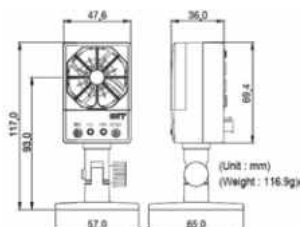
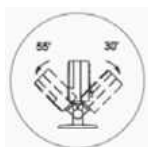
- By using of AC 50kHz high frequency corona discharge method, this Ionizer is especially effective in neutralizing static electricity at short-range and in maintaining steadfast balance of plus(+) and minus(-) ions.
- Miniature design allows you to install it in the confined space of equipment for LCD, semiconductor, etc., and this compact ionizer can neutralize static electricity from the objects effectively without using compressed air flow.
- A magnetic attached device enables you to install it at any metallic surfaces easily, and unique brackets allow you to bend the head part vertically, elevate up and down, and rotate the face in any desired directions.
- In case of excess high voltage and the abnormality of fan operating, LED light will be on as "RED"
- Easy maintenance thanks to a removable emitter pin unit.

Basic Component

Main unit
Power cable
Ground cable
Instruction manual

Additional Component

AC Adapter
Optional bracket



Specifications

Category	Descriptions	Remark
Item Code	M02-E-025	
Ion Balance	Within $\pm 10V$	
Ion-Generation Method	High frequency AC	
Emitter Pins	Titanium	
Decay time	1.5sec	150mm
Input Current	DC 24V, 0.15A	
Air Flow	0.27m ³ /min(Max)	
Adjustable Controls	Fan speed, Ion Balance	
Size	46(W) x 68.5(H) x 36(D)	Head
Operation Circumstance	0°C~50°C, 35%~65%RH	
Ozone(O ₃) Concentration	≤0.05ppm	

12 Equipment & Tools

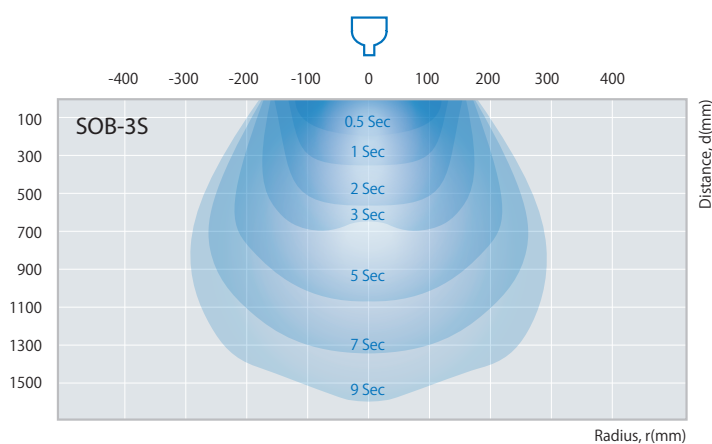
• Overhead Ion Blower



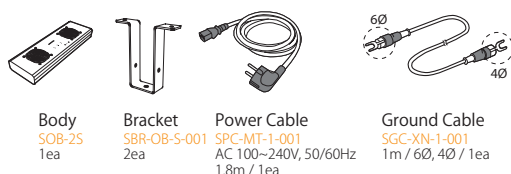
M03-E-006 (SOB-3S)

SOB-S Series

- Ion balance within $\pm 2V$ (at 60cm distance, max fan speed)
- EMI/EMS protect
- Automatic Ion Balance System
- Ion unbalance alarm(Buzzer)
- Automatic tip cleaning function
- Various interfaces with automated factories(PLC, computer)
- RMS(Real Monitoring System)-Option
- Remote control(SBL-RC2)
- 2, 3, 4, 5fans



Basic Component



Body
SOB-2S
1ea

Bracket
SBR-OB-S-001
2ea

Power Cable
SPC-MT-1-001
AC 100~240V, 50/60Hz
1.8m / 1ea

Ground Cable
SGC-XN-1-001
1m / 6Ø, 4Ø / 1ea

Additional Component



UTP Cable (Option)
SUC-MT-2-001
10m / 1ea

Remote Controller
SRC-OB-1-001
1ea

RMS Controller
Single Cable

Category	Descriptions			
Item Code	M03-E-005	M03-E-006	M03-E-023	M03-E-024
Model No.	SOB-2S	SOB-3S	SOB-4S	SOB-5S
Input Power	AC100~230V, 50/60Hz			
Power Consumption	37W	47W	60W	75W
Ion-Generation Method	Steady-State DC			
Air Blow volume	8.5m ³ / min	12.75m ³ / min	17.00m ³ / min	21.25m ³ / min
Noise Level(dB), 1000mm, High fan speed	63dB	64dB	65dB	67dB
Ion Balance (at 600mm, max air flow)	Within $\pm 5V$ (600mm)			
Ozone(O3) Concentration, at 300mm	$\leq 0.005\text{ppm}$			
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH			
Material (Main body)	Aluminum			
Material (Electrode)	Tungsten / Titanium			
Mounting Method	Ceiling, Desk-Top, Self-Standing			
Function	Remote Control, 4Steps Fan Speed, Tip Cleaning, Buzzer On/Off			
Alarm Function	Ion Unbalance Alarm, Alarm Buzzer			
Interface	Run State, Remote On/Off, RS 485, Alarm(Ion Unbalance), Tip Cleaning			
Option	RMS(Real Monitoring System)			
Warranty	1 year			
Weight	3.1Kg	4.1Kg	5.1Kg	6.2Kg
Size(W x L x D) - mm	160x630x59 160x677x184	160x840x59 160x887x184	160x1140x59 160x1187x184	160x1440x59 160x1487x184

12 Equipment & Tools



M03-E-021



M03-E-022

Category	Descriptions	
Item Code	M03-E-021	M03-E-022
Model No.	IPI-322	IPI-332
Input voltage	AC90~260V, 50/60Hz	AC90~260V, 50/60Hz
Ion generation	Steady-State DC	
Output adjustment	Automatic adjustment of amount of ion emission by each fan module	
Point material	Tungsten	
Wind speed	3~5m/sec.	
Ion balance	± 3V or less (in 600mm)	
Decay time	3 sec or less (in 600mm)	
Material(Main body)	Aluminum	
Dimension	165(W) x 700(L) x 88(H)mm	165(W) x 1100(L) x 88(H)mm
No. of Fan	2	3
Weight	4.7kgs	6.9kgs
Warranty	18 months	

● Ion Bar

SIB1/2 series

- Ion balance within +/- 50V (at 30cm distance)
- Slim space / mini size
- Easy maintenance
- Tip Socket(SIB1 Series) - 3ea~63ea
- Tip Socket(SIB2 Series) - 3ea~70ea
- 5 mark certified(2006)



M07-E-025 (SIB1-80A)

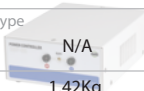
Basic Component

Ion Bar, High Voltage Cable

Additional Component

Middle Bracket

Power Controller

Category		Descriptions			Remark
Item Code		M08-E-029	M08-E-028	M08-E-018	
Model No.		SBP-11N	SBP-11	SBP-06	
Input Power		AC100~240V, 50/60Hz			
Power Consumption		23W	22W	16W	
Alarm		1:4type 	H/V Abnormal 	1:1 or 2type 	UTP (SBP-11N)
Weight		2.48Kg	2.46Kg	1.42Kg	
Main Body Material		SUS304	EGL	EGL	
Power Cable		1.8m			
Ion Bar Number Connectable		4set(Max)		1set	
Function	Adjust Frequency [Hz]	1, 3, 5, 8, 10, 20, 30	-	-	
	Adjust Duty Ratio [%]	40 ~ 60 (100 unit)	40 ~ 60		
Warranty		1 Year			

12 Equipment & Tools

SKB Series - Air Knife Slim Ion Bar



Features

- Ion Balance: 10~33V(at 10mm~150mm)
- Water Proof (suitable for high humidity area)
- Compact & slim design
- Adjustable input voltage on circumstance
- Alarm for abnormal high voltage
- Electric shock less
- Non-air pressure type
- Operating distance: 10~250mm

SIB3-RD Series

- Ion balance within $\pm 30V$ (at 100cm distance)
- Pk Voltage control function
- Aerobody design
- Easy maintenance
- Low air consumption
- Tip socket(5ea~59ea)
- RMS(Real Monitoring System)
- Remote control(SIB-RC1) for SIB3-600RD~3200RD
- CE certified(2004)
- S mark certified(2005)



AC to DC Power Supply (SIB3-600RD~3200RD) - Option



M08-E-009 (SBP-RD)

Power Controller (SIB3-250/330RD)



M08-E-007 (SBP-2R)

Category	Descriptions
Item Code	M08-E-009
Model No.	SBP-RD
Input Power	AC100~240V, 50/60Hz
Power Consumption	Max. 60W
Weight	1.85kg
Main Body Material	EGL
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH
Output Voltage	DC24V Max. 2A
Output Port	4 Ports
Warranty	1 Year

600RD-3200RD

Basic Component

Ion Bar, Middle Bracket, Power Cable, Signal Cable

Additional Component

Power Supply, Remote Controller, RMS Controller, UTP Cable, Interface Gender

250RD, 330RD, SBP-2R

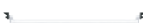
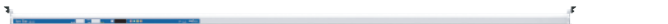
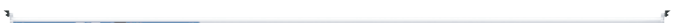
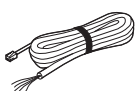
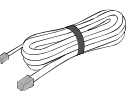
Basic Component

Ion Bar, Signal Cable, UTP Cable, Power Controller, Power Cable, Ground Cable

Additional Component

RMS Controller, UTP Cable

12 Equipment & Tools

Model	SIB3-RD Series	Middle Bracket SBR-NB-2-001	Tip Socket
SIB3-250RD			 5ea
SIB3-330RD			 6ea
SIB3-600RD			 13ea
SIB3-700RD			 15ea
SIB3-800RD			 17ea
SIB3-900RD			 18ea
SIB3-1000RD			 20ea
SIB3-1200RD			 23ea
SIB3-1300RD			 26ea
SIB3-1500RD		 1ea	 28ea
SIB3-1600RD		 1ea	 30ea
SIB3-1800RD		 1ea	 34ea
SIB3-2100RD		 2ea	 40ea
SIB3-2200RD		 2ea	 42ea
SIB3-2300RD		 2ea	 44ea
SIB3-2500RD		 3ea	 48ea
SIB3-3000RD		 3ea	 56ea
SIB3-3200RD		 3ea	 59ea
Controller	< For SIB3-250RD, 330RD >  Power Controller SBP-2R < For SIB3-600RD~3200RD >  Power Supply (Option) SBP-RD  Remote Controller SIB-RC1		
Cable	 Power Cable SUC-3R-3-001 10m / 1ea  Signal Cable SUC-MT-2-001 10m / 1ea  UTP Cable (Option) SUC-MT-2-001 10m / 1ea		

12 Equipment & Tools

SIB4 Series



M07-E-084 (SIB4-800)

- Easy install in variable space thanks to its slim design
- The embedded earth electrode, prevent contamination from circumstance
- Ion current increased by low corona discharge loss
- Auto ion balance function
- Tip cleaning alarm function(periodic tip cleaning mode by timer)
- ±Peak voltage control function
- Parallel power connection function (Up to 8 bars)
- Turbulent air flow socket
- Remote controller (SIB-RC1)
- Power controller(SBP-RD) - Option
- RMS (Real Monitoring System) - Option

Category		Descriptions		
Item Code		M07-E-000		
Model No.		SIB1 & 2 Series	SIB3-RD Series	SIB4 Series
Input Power		-	DC24V (±5%) 1A	DC24V (±5%)
Power Consumption		-	Max. 12W	Max. 14.4W
Ion-Generation Method		Corona Discharge Pulse AC	Corona Discharge Pulse AC	Corona Discharge Pulse AC
Air Purge Supply Pressure ** CDA(Clean Dry Air), N2	1~5kgf/cm ² (0.5Mpa)		1~5kgf/cm ²	0.1 ~ 0.5Mpa
	≤ 1kg/cm ²	SIB2-07, SIB2-10, SIB2-16		
	≤ 3kg/cm ²	SIB1-16A ~ SIB1-48A		
		SIB2-20 ~ SIB2-50		
	≤ 5kg/cm ²	SIB1-64A ~ SIB1-256A SIB2-60 ~ SIB2-250		
Air purge connection port		Pipe Tap 1/8"	Pipe Tap 1/8"	Pipe Tap 1/8"
Ion Balance	1000mm	Within ±50V	Within ±30V	Within ±30V
Ozone (O3) Concentration		≤0.005ppm	≤0.05ppm	≤0.05ppm
Decay Time Characteristics		See the accompanying test document	See the accompanying test document	See the accompanying test document
Main Body Material	Level V0	Non-Flammable ABS	Non-Flammable ABS	Non-Flammable ABS
Electrode Material		Tungsten, Titanium	Tungsten / Titanium / Poly Silicon / X-Material	Tungsten / Titanium / Poly Silicon
Emitter Replacement		Cartridge type / Pin type	Cartridge type	Cartridge type
Operation Circumstance		0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH
Dimensions		See the accompanying drawing paper	See the accompanying drawing paper	See the accompanying drawing paper
Mounting Method		-	Ceiling	Vertical or Horizontal Installation
Function		-	Remote Control	Remote Control
Adjust Function	Frequency [Hz]	-	0.1, 0.3, 1, 3, 5, 8, 10, 20, 30, 50	0.1, 0.3, 1, 3, 5, 8, 10, 20, 30, 50
	Duty Ratio		40 ~ 70	40 ~ 70
	Voltage [Level]		Positive 1 ~ 10, Negative 1 ~ 10	Positive 1 ~ 10, Negative 1 ~ 10
	Mode Set		-	Mode Set (dis. 50~100mm)
Alarm Function		-	H/V abnormal Alarm, Low Ion Alarm, Tip Cleaning Alarm	H/V abnormal Alarm, Tip Cleaning Alarm (Setting)
Interface	RJ45	-	Run State, Remote, Interlock, RS485, Alarm (H/V Abnormal, Low Ion, Tip Cleaning)	Run State, Remote, RS485, Alarm (H/V Abnormal, Tip Cleaning)
Operating Distance		50~2,000mm	50~2,000mm	50~2,000mm
Option		-	RMS (Real Monitoring System), SBP-RD (AC to DC Power Supply)	RMS (Real Monitoring System), SBP-RD (AC to DC Power Supply)
High Voltage Cable		Shielding Wire 4m (UL3239_20kV - 1007AWG18)	-	-
Warranty		1 year		

122 Equipment & Tools



Diagram illustrating the connection of two 10M long output cables (a) to a power supply unit. The power supply is connected to ground (c).

- (a) Output Cable / Max Length : 10M
- (b) Ground Cable / Length : 10M / Ø4-Ø3[mm]
- (c) Ground Cable / Length : 1M / Ø4-Ø4[mm]



- | MODEL No. | TIP Q'TY | A | B | C | D | MIDDLE
BRACKET Q'TY |
|-----------|----------|------|------|------|------|------------------------|
| SRB-1100 | 18 | 1020 | 1118 | 1160 | 1180 | - |
| SRB-1200 | 20 | 1140 | 1238 | 1280 | 1300 | - |
| SRB-1300 | 22 | 1260 | 1358 | 1400 | 1420 | - |
| SRB-1500 | 24 | 1380 | 1478 | 1520 | 1540 | 1 |
| SRB-1600 | 26 | 1500 | 1598 | 1640 | 1660 | 1 |
| SRB-1800 | 30 | 1740 | 1838 | 1880 | 1900 | 1 |
| SRB-2100 | 36 | 2100 | 2198 | 2240 | 2260 | 2 |
| SRB-2200 | 38 | 2220 | 2318 | 2360 | 2380 | 2 |
| SRB-2300 | 39 | 2280 | 2378 | 2420 | 2440 | 2 |
| SRB-2500 | 43 | 2520 | 2618 | 2660 | 2680 | 3 |
| SRB-3000 | 50 | 2940 | 3038 | 3080 | 3100 | 3 |
| SRB-3200 | 53 | 3120 | 3218 | 3260 | 3280 | 3 |

- Model: SRB-2100
- Output Time: Positive(+) 1 sec., Negative(-) 1 sec.
- Output Voltage: Positive(+) 11kV, Negative(-) 7.5kV
- Decay Time: $\pm 1,000V$ to $\pm 100V$
- Charge Plate capacitance: 20pF(150 X 150 mm), Trek 156A1

12 Equipment & Tools

SIB7 / SIB7A Series - Mini Ion Bar



Features

- Ion Balance: $\pm 30V$ (in 1000mm)
- Integral Controller type
- Auto Ion Balance(SIB7A)
- Connect Ion Bars each other to power source(Max. 4units)
- One touch nozzle socket
- Operating distance: 50~2,000mm

SIB-ex Series



Features

- Explosion-proof ion bar
- ATEX Certificate for Europe
- KGS Certificate for Korea
- No risk of explosion with low ignition energy
- No firing potential with using flame retardant material
- Operation distance: 50mm~200mm

SSB1 Series



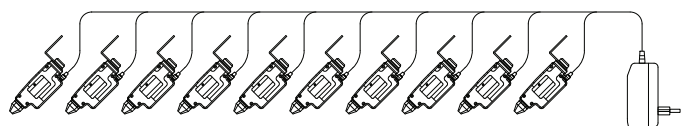
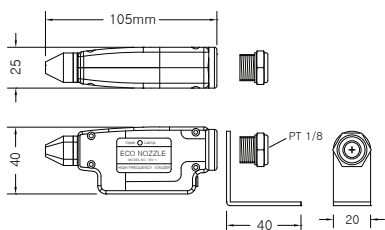
Features

- Can be operated in high temperature environment(Max. 130 °C)
- Small and slim body
- Various lengths are available
- Dedicated tip cleaning device (Option)
- Operation distance: 10mm~250mm
- Ion Balance: $\pm 50V$

• ECO Ion Nozzle



M06-E-039



Adapter :1,500mA

Features

- High frequency AC
- Anti shock structure
- Use the high purity tungsten discharge needle
- Easy to Install
- Connect maximum 10units of ECO Ion Nozzle to one adaptor

Specifications

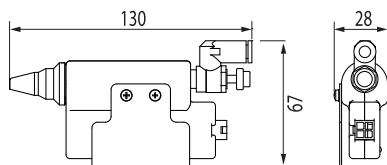
Category	Descriptions	Remark
Item Code	M06-E-039	
Ion Balance	Within ± 30	
Ion Mode	AC 14Khz	
Air Pressure	2~7 Bar	
Decay time	0.6 sec.	($\pm 1,000v$ to 100v)
Effective Distance	10cm~50cm	
Power	DC 12~15V, 150mA, Adapter	
Weight	110g	

12 Equipment & Tools

• Ion Nozzle

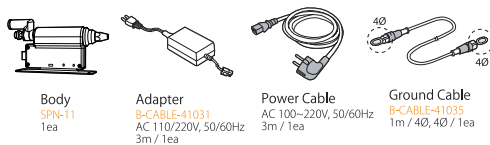


M06-E-001 (SPN-11)



- Ion balance within $\pm 30V$ (at 30cm distance, Air 0.3Mpa)
- Teflon Nozzle, which has durability specially against Ozone
- Piezo High Frequency(72kHz) which will minimize contamination on the tip
- Various Fitting Tube(Optional)

Basic Component



Body
SPN-11
1ea

Adapter
B-CABLE-41031
AC 110/220V, 50/60Hz
3m / 1ea

Power Cable
AC 100~220V, 50/60Hz
3m / 1ea

Ground Cable
B-CABLE-41035
1m / 40, 40 / 1ea

Additional Component



Extension Cable (Option)
SEC-NG-1-001
5m or 6m / 1ea

Fitting Tube (Option)
BI, BI-45, DI, DI-90, UI, EC

Power Controller



M08-E-019 (SNC-04)

Basic Component

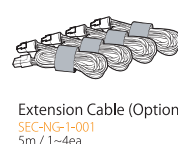


Body
SNC-04
1ea

Power Cable
B-CABLE-41005
AC 100~230V, 50/60Hz
3m / 1ea

Ground Cable
B-CABLE-41034
1m / 40, 40 / 1ea

Additional Component



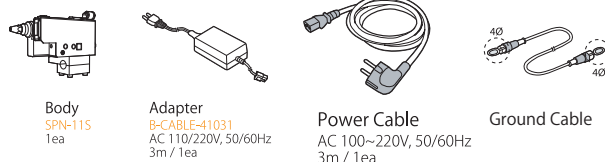
Extension Cable (Option)
SEC-NG-1-001
5m / 1~4ea



M06-E-002 (SPN-11S)

- The photoelectric sensor can control SPN-11S to work only in case of necessity.
- Teflon made nozzle for durability against ozone.
- Ion Balance within $\pm 20V$. (at 300mm Distance, Air 0.3Mpa)
- Sensitivity and running time of the sensor can be adjusted.
- Can be adjusted in various forms and shapes, such as miniature size, gun type, etc.
- The bracket for special space and equipment.

Basic Component



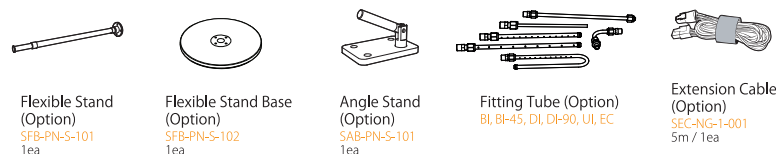
Body
SPN-11S
1ea

Adapter
B-CABLE-41031
AC 110/220V, 50/60Hz
3m / 1ea

Power Cable
AC 100~220V, 50/60Hz
3m / 1ea

Ground Cable

Additional Component



Flexible Stand (Option)
SFB-PN-S-101
1ea

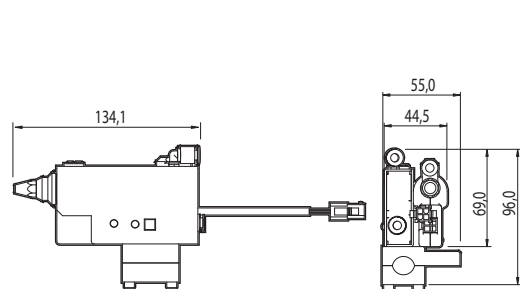
Flexible Stand Base (Option)
SFB-PN-S-102
1ea

Angle Stand (Option)
SAB-PN-S-101
1ea

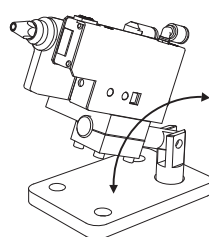
Fitting Tube (Option)
BI, BI-45, DI, DI-90, UI, EC

Extension Cable (Option)
SEC-NG-1-001
5m / 1ea

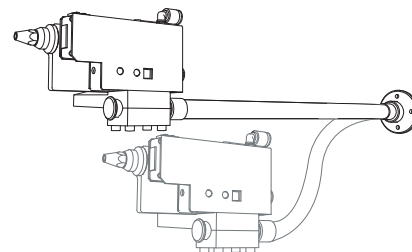
12 Equipment & Tools



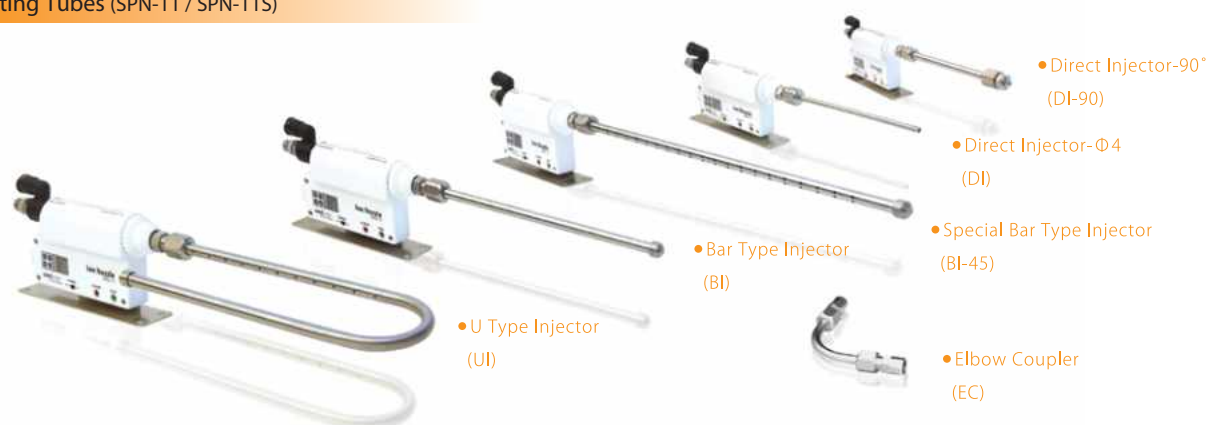
Angle Stand (Option)



Flexible Stand (Option)



Fitting Tubes (SPN-11 / SPN-11S)



Category	Descriptions	
Item Code	M06-E-001	M06-E-002
Model	SPN-11	SPN-11S
Input Power	Adapter (AC110/220V, 50/60Hz, DC24V)	
Power Consumption	9W	15W
Ion-Generation Method(Piezo)	High Frequency AC	
Ion Balance (at 300mm)	Within $\pm 15V$	
Air Purge Supply Pressure *CDA(Clean Dry Air), N2	1~6kgf/cm ² (0.5Mpa)	0.1~0.5MPa
Air Inlet	$\Phi 6$	
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH	
Nozzle Material (Level V0)	Teflon	
Electrode Material	Tungsten / Titanium	
Weight	130g	250g
Color	White	
Mounting Method	Stand Type	Flexbie Type
Sensor	-	Photoelectric Sensor
Alarm Function	H/V Abnormal	
Interface	Alarm(H/V abnormal)	
Model	-	Photoelectric Sensor(HP100-A1)
Detection System	-	Diffuse-scan
Power Supply	-	10 to 30Vdc (ripple 10% max.)
Current Consumption	-	16mA max
Scanning Distance	-	1m
Differential Travel	-	20% max. (at rated scanning distance)
Operation Mode	-	Light-ON / Dark-ON selectable by switch
Response Time	-	500ms max. for both operation and recovery
Emitter	-	Infrared LED
Ambient light Immunity	-	Incandescent lamp: 10,000 lux max. Sunlight: 40,000 lux max.
Warranty	1 year	

12 Equipment & Tools

● Ion Chamber



M06-E-040



Our Ion chamber is very convenient to use. When a charged item is put into the Chamber, the ion is automatically created by a infrared sensor.

It is suitable for removing the static electricity on the products in the electronics or general industries. The Ion chamber also has apparatus of dust collecting function by infrared sensor detecting.

Features

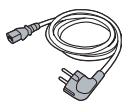
- Dust Removal on small parts and products
- Automatically controlled by infrared rays photo sensor
- Operating time setting function
- Air filter (0.3 μm)
- Dust pre-filter

When a charged item nears to the infrared sensor, it will remove static electricity & dust at the same time.

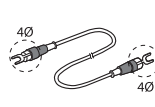
Basic Component



Body
SIC-150
1ea



Power Cable
B-CABLE-41005
AC 100~220V, 50/60Hz
3m / 1ea

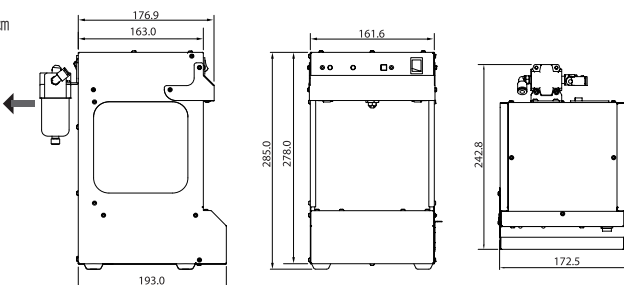


Ground Cable
B-CABLE-41034
1m / 4Ø, 4Ø / 1ea

Applications

- Assembly lines, such as Cell Phone, LCD Panel, Optic Lens, Semiconductor, Electronics Devices, etc.
- Medical Part, Cosmetic Container
- Electrostatic Sensitive Devices and PCB

Air-Filter Unit: 0.3 μm



Specifications

Category	Descriptions	Remark
Item Code	M06-E-040	
Model	SIC-150	
Input Power	AC110 ~ 220V, 50/60Hz	
Power Consumption	20W	
Current Consumption	90mA	AC 220V
Ion-Generation Method	High Frequency AC	Piezo
Ion Balance	Within $\pm 20V$	
Air pressure	0.1 ~ 0.5MPa	CDA(Clean Dry Air), N2
Air Inlet	$\Phi 6[\text{mm}]$	
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH	
Case Material	Stainless Steel	Level V0
Electrode Material	Tungsten / Titanium	
Weight	3.3KG	
Sensor	Photoelectric Sensor	
Maximum Air Flow	2.499[m ³ /min]	
Alarm Function	H/V Abnormal	
Warranty	1 Year	

12 Equipment & Tools

• Cleanroom Vacuum Cleaner



M12-E-001

M12-E-002

M12-E-003

M12-E-001
M12-E-003



- ① Intake
- ② Non-Woven Filter
- ③ Polyester Filter
- ④ Motor
- ⑤ H.E.P.A. Filter



- 1. HEPA Filter
- 2. Polyester Filter
- 3. Non-Woven Filter
- 4. Filter Basket
- 5. Hose Connector
- 6. Hose
- 7. Curved connector
- 8. Adjustable Wand(S, A/L)
- 9. Floor&Carpet Tool
- 10. Crevice Tool
- 11. Round Brush

M12-E-002



- ① Intake
- ② Non-Woven Filter
- ③ Polyester Filter
- ④ Impact Filter
- ⑤ H.E.P.A. Filter
- ⑥ Motor
- ⑦ U.L.P.A. Filter



- 1. ULPA Filter
- 2. HEPA Filter
- 3. IMPACT Filter
- 4. Polyester Filter
- 5. Non-Woven Filter
- 6. Hose Connector
- 7. Hose
- 8. Curved connector
- 9. Adjustable Wand(S, A/L)
- 10. Floor&Carpet Tool
- 11. Crevice Tool
- 12. Round Brush



M12-E-005



List of Accessories

- | | |
|----|-------------------|
| 1 | Filter holder |
| 2 | Polyester Filter |
| 3 | Paper Filter |
| 4 | Suction hose |
| 5 | Curved handle |
| 6 | Hose connector |
| 7 | Wand |
| 8 | Floor&carpet tool |
| 9 | Crevice tool |
| 10 | Round brush |
| 11 | HEPA filter |

12 Equipment & Tools

Item code	M12-E-001 (CR-5050N)	M12-E-002 (CR-5050S)	M12-E-003 (CR-5050SM)	M12-E-005 (CR-5040S)
Descriptions				
Electric Power	220V / 50~60Hz (110V is available on request)			
Vacuum Motor	1350W (Dry type motor)			2700W (1350W x 2)
Recovery Tank (Liter)	34	44	9	75
Filtering Efficiency (%)	99.97 (0.3um)	99.99 (0.12um)	99.97 (0.3um)	99.97 (5um)
Bag Filter Capacity (ℓ)	10	10	6	
Cleanroom Class	Class 100-1000	Class 10-100	Class 100-1000	Class 100,000
Filtration	3 STEPS Paper Polyester HEPA Filter	5 STEPS Paper Polyester IMPACT Filter HEPA Filter ULPA Filter	3 STEPS Paper Polyester HEPA Filter	3 STEPS Paper Polyester HEPA Filter
Dimension(cm)	44x49x70	44x49x95	32x32x46	73x65x123
Net Weight (kg)	14.25	16.55	9.2	32
Gross Weight (kg)	18	20	13	

Item code	M12-E-001 (CR-5050N)	M12-E-002 (CR-5050S)	M12-E-003 (CR-5050SM)	M12-E-005 (CR-5040S)
Descriptions				
ULPA filter		0		
HEPA filter	0	0	0	0
IMPACT filter		0		
Polyester filter	0	0	0	0
Paper filter	0	0	0	0
Cartridge filter				
Hose connector	0	0	0	0
Hose	0	0	0	0
Curved connector	0	0	0	0
Adjustable wand	0	0	0	0
Floor&carpet tool	0	0	0	0
Crevice tool	0	0	0	0
Round brush	0	0	0	0

● ESD Vacuum Cleaner(Backpack type)



Specifications

- Voltage: 220-240V
- Power: 1400W
- Noise Level: ≤75dBA
- Safety Standard: GS/CE/EMC/ROHS
- Cord length: 5M
- Dust capacity: 4.0L
- Color: Black
- Surface Resistance: 10E5~10E6 ohm
- NW/GW(kg): 4.7 / 6.2
- Product dimension: 490 x 320 x 255mm
- GB dimension: 560 x 325 x 290mm

Features

- Light weight and super easy to use.
- Padded shoulder and waist straps stabilize the vacuum on the operator's back and hips and permit long, uninterrupted cleaning.
- Snap on top is reversible to allow hose to be moved to either side for right or left handed operation.
- Four-stage filtration system with sealed-air HEPA filter provides superior clean air exhaust.
- Blower adaptor fits into front of unit, converts vacuum into a blower or inflator.
- With blowing function, has blowing accessories

12 Equipment & Tools

• ESD Vacuum Cleaner



M66-E-004

Specifications

- Measurement (mm): 350*350*565
- Capacity: 35L
- Voltage: 120V-230V/50Hz-60Hz
- Power: 1250W
- Power Cord: 5m
- Hose length: 1.5m
- Plastic Inserting Tube Length: 480mm
- Vacuum level: 18Kpa
- Noise level: 82dBA
- HEPA Filter for Cleanroom
- Surface Resistance: 10E5~10E6 ohm



List of Accessories

1 Handle	12 Blow connection
2 ON/OFF switch	13 Wet brush
3 Top section	14 Sponge Filter
4 Filter basket	15 Short nozzle
5 Safety float valve	16 Pedestal
6 Clasp	17 Clasp seat
7 Container	18 Accessory holder
8 Vacuum hose connection	19 Paper dust bag
9 Rollers	20 Square round brush
10 Flexible vacuum hose	21 Water drain screw
11 Plastic tube	22 HEPA filter



M66-E-005



M66-E-006

12 Equipment & Tools



M66-E-007 (Cordless)



M66-E-008

Item Code	M66-E-005	M66-E-006	M66-E-007	M66-E-008
Power	230V, 450W	230V, 500W	22V, 190W	230V, 450W
Filtration	Ultrafine 88% efficiency at 0.3um 5 Gallon Dry 134 Pleat Cellulose	HEPA 99.97% efficiency at 0.3um 1 Quart Dry 56 Pleat, 3 Layers One Cellulose Layers Two Glass Layers	ULPA 99.999% efficiency at 0.12um 1 Gallon Dry 56 Pleat, 3 Layers One Cellulose Layers Two Glass Layers	Ultrafine 88% efficiency at 0.3um 1 Gallon Dry 43 Pleat Cellulose
Dimensions(L,W,H)(mm)	228.6 x 228.6 x 482.6	305 x 159 x 184	508 x 159 x 235	508 x 159 x 235
Weight(kg)	4.42	1.86	5.08	5.05
Warranty	18 months (limited)	18 months (limited)	1 year (limited)	3 years (limited)

• Nozzle type Vacuum Sealer



Desk top type



Stand type

Features for Vacuum Sealer

- Do not need air compressor for an electric type. You can use it after just connecting electric cord.
- Quiet sound in electric type. It is recommendable for a small office, a store, etc.
- Easy to control thanks to a simple digital controller.
- Good durability and strong for corrosion thanks to Stainless steel case.
- Support various mode such as vacuum, sealing, gas and gas flushing.
- Compact size for easy installation.

12 Equipment & Tools

Features for Digital controller

- Memory function
- Counting function
- Temperature indicator
- Auto nozzle function
- Key lock to prevent malfunction
- Vacuum and temperature sensor for reliable vacuum packing
- Self-diagnosis function.



Physical property

Item Cord	Sealing Size(mm)		Power consumption (KW)	Vacuum pump	Air consumption	Work capacity (depend on the items)	Dimension (mm)	Net/GrossWeight (kg)
	Width	Length						
M41-E-021	10	350	1.5	Electric Motor pump	N/A	1~6ea/min	520 x 500 x 515	26/38
M41-E-022	10	450	1.7				630 x 530 x 515	27/40
M41-E-036	10	600	2.2				780 x 530 x 515	29/43
M41-E-023	10	450	1.7	Ejector pump (options: oilless pump, oil pump)	5~7kg/cm2	1~10ea/min	630 x 530 x 515	31/46
M41-E-024	10	600	2.2				780 x 530 x 515	32/49
M41-E-025	10	800	3.5				970 x 530 x 515	35/55

• Chamber type Vacuum Sealer



Single chamber type



Double chamber type

Features for Vacuum Sealer for single chamber

- Table and stand models
- Transparent acrylic cover for packing process check-up (option: stainless steel cover)
- Easy operation thanks to a simple digital controller
- Good durability and strong for corrosion thanks to stainless steel case.

Features for Vacuum Sealer for double chamber

- Higher work capacity with double chambers
- Cover is made of aluminum (option: stainless steel cover)
- Easy operation thanks to a simple digital controller
- Good durability and strong for corrosion thanks to stainless steel case.
- Easy to clean

Item Cord	Sealing Size(mm)		Chamber inner size(mm)	Chamber outer size(mm)	Work capacity (depend on the items)	Vacuum pump	Net Weight (kg)	Electricity
	Width	Length						
M41-E-026	3.2	415	430 x 455 x 160	480 x 550 x 430	1~3 times/min	400L	49	1ph, 220v/60hz (50hz available)
M41-E-027	3.2	500	510 x 620 x 170	570 x 723 x 970		600L	120	
M41-E-028	3.2	600	620 x 600 x 170	680 x 703 x 970		600L	130	
M41-E-029	3.2	600	620 x 700 x 170	680 x 800 x 970		800L	145	
M41-E-030	10	910	940 x 450 x 155	1000 x 550 x 970		600L	130	
M41-E-031	10	750	810 x 690 x 170	1700 x 1000 x 1050	2~3 times/min	2000L	330	3ph, 220v/380v 60hz (50hz available)
M41-E-032	10	750	950 x 800 x 180	1700 x 1025 x 1325		3200L	370	
M41-E-033	10	850	950 x 800 x 200	1900 x 1025 x 1325		5000L	450	

12 Equipment & Tools

• Automatic Tape Cutter



M14-E-007 (RT-3700)

- Semiautomatic type
(Press button after using all tapes put on disk)
- Only adhesive product can be used
- Long life time
- Automatic cutting and movable sensor



M14-E-005 (RT-7000)

- Fast tape feed and cutting speed.
- Quantity-count function
- Self-diagnosis display
- Emergency alarm
- Build-in Tweezers, Oil, and Separator
- One touch exchangeable knife set
- Automatically apply lubricant to the knife edge.
- Enable to use 2 Rolls at the same time
- Both non-adhesive and adhesive products can be used.
- Preset function (Max 6 different tape lengths)



M14-E-011

Features

- Easy to exchange the knife set
- Enable to use 2 rolls at the same time
- Enable to choose full automatic mode or semi-automatic mode
- Enable to use various adhesive and non-adhesive tapes
- The allowed width is up to 150 mm



M14-E-008 (RT-7700)

- The same function of RT-7000
- Easy to disassemble and maintain
- Programming function

NEW



M14-E-010 (RT-9000)

- The same function of RT-7000
- Easy to tear off the tape as the tape end is folded automatically. (option)



M14-E-006 (RT-8000)

- The same function of RT-7000
- Preset function (Max 12 different tape lengths)
- Programming function

Model	M14-E-007 (RT-3700)	M14-E-005 (RT-7000) M14-E-008 (RT-7700) M14-E-006 (RT-8000)	M14-E-010 (RT-9000)	M14-E-009	M14-E-011
Tape Width	3~25mm	6~60mm	6~60mm	10mm ~ 80mm	50mm ~ 150mm
Cut Length	15~70mm	5~999mm	General: 5~999mm Fold: 15~999mm	10mm ~ 999mm	10mm ~ 999mm
Power	AC 110/220V, 50/60Hz, 40W	AC 110~230V, 50/60Hz, 25W	AC 110~230V, 50/60Hz, 25W	AC 220V, 50/60Hz	
Size	126(W) x 258(D) x 150(H)	115(W) x 215(D) x 130(H)	116(W) x 221(D) x 148(H)	190 (W) x 230 (L) x 140 (H)	265(W) x 230 (L) x 150 (H)
Weight	2.2 KG	2.5 KG	2.5 KG	3.5 KG	6.5 KG

12 Equipment & Tools

• Automatic label dispenser



Features

- Auto detection sensor
- Memory function
- Working speed control
- Easy and simple label installation
- Compact size
- Easy and simple removing release paper
- CE certificated

Item Code	M60-E-001	M60-E-002	M60-E-003
Available label width	15mm ~60mm	15mm ~ 120mm	15mm ~ 180mm
Power consumption	30 W	35 W	40 W
Power requirement	AC 100~240V	AC 100~240V	AC 100~240V
Size (mm)	103 (W) x 216 (L) x 140 (H)	163 (W) x 231 (L) x 152 (H)	223(W) x 241 (L) x 157 (H)
Weight	2.1 KG	3.4 KG	4.6 KG

• Laminating machine



Features

- Strong roller system: 6heating rollers + 2cooling rollers
- Strong motor system: Special DC motor for 5,000hours at maximum of ling life
- Maximum 330mm width and 350um thickness is able to laminate
- Can laminate up to 4m per minute
- Actual working time check funtion



Description



MEAS : Measures actual roller temp
 STOP : Stop roller
 REV : Reserve action
 HOT : Initial setting to 100°C, speed 6
 COLD : Cold film lamination
 MEMO : Memory function
 SPEED : Variable speed from 1-9

Item Code	M70-E-001	M70-E-002
Max. Laminating Width	330mm(13")	
Max. Laminating Speed	1,400mm/min	4,000mm/min
Max. Pouch Thickness	350MIC(14MIL)	
Max. Laminating Thickness	3mm	
Heating System	Heating roller internal heater	
Q'ty of Roller	6	10
Carrier	Free	
Temperature Control	Yes	
Speed Control	Yes	
Reverse Switch	Yes	
Preheating Time	5 min.	6 min.
Power Supply	AC 100, 110, 120, 220, 240V (50/60Hz)	
Power Consumption	1,050watts	1,300watts
Dimension	545 x 250 x 125mm	653 x 350 x 146mm
Weight	15kgs	29kgs
Operation Temperature	0-140	0-160

12 Equipment & Tools

• Automatic Shoe Cover Dispenser



M67-E-001

Category	Descriptions
Shoe cover capacity	PE: 200ps
	CPE: 160cps
	Non-woven: 100pcs
Power supply	AC220V 50HZ
Machine size	L63 x W31 x H101cm
Packing size	L71 x W37.5 x H107.5cm/ctn
Net weight	20kgs/set
Gross weight	22kgs/set/ctn



M02-E-003

Category	Descriptions
Material	Non-woven
Net weight	4gram/pc
Thickness	0.13mm
Packing	100pcs/BOX, 21box/ctn, 2100pcs/ctn
Packing Size	49*80*63cm(H)/ctn
Gross weight	15kgs/ctn



M67-E-002

Category	Descriptions
Shoe cover capacity	PE: 100ps
	CPE: 80cps
	Non-woven: 50pcs
Power supply	AC220V 50HZ
Machine size	L63 x W31 x H75cm
Packing size	L71 x W37.5 x H82cm/CTN
Net weight	20kgs/set
Gross weight	22kgs/set/ctn



M02-E-004

Category	Descriptions
Material	Non-woven
Net weight	4gram/pc
Thickness	0.13mm
Packing	50pcs/BOX, 42box/ctn, 2100pcs/ctn
Packing Size	49*80*65cm(H)/ctn
Gross weight	15kgs/ctn

• ESD LED Magnifier



M69-E-001

Features

- Lens Material : Glass
- Lens Size: 7.5"X6.2"
- Diopter : 3Diopter/5Diopter
- Voltage : 100V/ 110-120V / 220-240V
- Light Source : LED
- Standard Mount: Table Clamp
- Surface Resistance : 10E5 ~10E6 Ohms

Packing Details

- Carton Size : 59x52x30cm
- 4pcs/carton
- Gross(Net) Weight: 20(18)kgs

12 Equipment & Tools

• Air Clean Mat & Water Clean Mat

Are you still using disposable sticky mats?

It is time to think about the environment and being cost-effective at the same time.

We have two types of reusable and eco-friendly Clean Mats that will draw your immediate attention.

The first one is Air Clean Mat, which cleans the bottom of the sole by sucking dust through two step filters. The second one is Water Clean Mat, which washes the bottom of the sole directly with water and moving brushes on the mat.

These Mats are one of the most effective ways to remove dust and contaminants from the sole of the shoes, leaving less wastes and particles. Adopting these remarkable mats will also be a cost saving solution in the long term, even if the initial cost can be higher than sticking to the traditional disposal sticky mat.

Air Clean Mat



M58-E-003

Features

- Detecting sensor
- Air refreshing function
- Easy installation and maintenance
- 2 step filtration (antibacterial and HEPA filters)
- Access Floor type (M58-E-008)
- Heavy traffic (trolley, carts, etc.) type is available
- Air shower room type (M58-E-009)
- Customized sizes are available on request

Item Code	Outer Size(mm)	Mat Size(mm)
M58-E-001	20T x 600 x 1100	500 x 1000
M58-E-002	20T x 600 x 2100	500 x 2000
M58-E-003	20T x 700 x 800	600 x 700
M58-E-004	20T x 800 x 1100	700 x 1000
M58-E-005	20T x 800 x 2100	700 x 2000
M58-E-006	20T x 1100 x 1100	1000 x 1000
M58-E-007	20T x 1100 x 1500	1000 x 1400
M58-E-008	50T x 600 x 600	600 x 600
M58-E-009	150T x 100 x 1000	100 x 1000



Access Floor



Entrance



Entrance



Air Shower Room

Water Clean Mat



M57-E-002

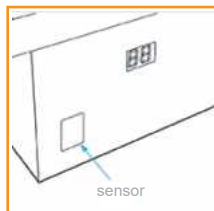
Features

- Detecting sensor
- Cleaning with water
- Easy relocation with wheels
- Special cleaner (diluent) for heavy dirt, oils, etc. (option)

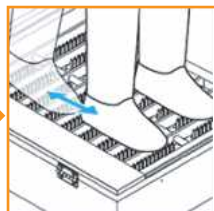


12 Equipment & Tools

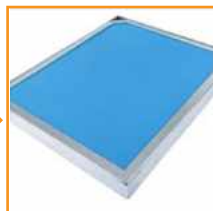
How it works



① Step on the mat, then the sensor on the control box will detect motions automatically and the brushes will start moving.



② Move your feet back and forth 3-4 times.



③ Step on the absorption mat to dry the water out of the soles.



Unit	Item Code	M57-E-001	M57-E-002	M57-E-003	M57-E-004	M57-E-005	M57-E-006
Size(W x L)-mm	Outer Size	730x545	730x1150	730x1095	730x1695	730x1635	730x2240
	Absorption mat		415x495		470x550		470x550
Height(mm)		970	970	970	970	970	970
Weight(kg)		35	70	70	105	98	140
Input Power		AC220V, 50/60HZ					
Power Consumption		40W	40W	80W	80W	120W	120W
Capacity - Washing Tank		10L	10L	20L	20L	30L	30L

● Air Particle Counter



M72-E-001



Category	Description
Test Particle size	0.3 μ m/2.5 μ m/10.0 μ m
Light source	Semiconductor lasers
Formaldehyde range	0.5mg/m ³
Accuracy	±5% (HT-9601)
Temperature range(±5%)	0~50°C/32~122°F
Humidity range(±2%)	0~100%RH
Display	320*240 2.8in LCD display
Counting efficiency	100±10%@0.5
Sampling	Custom(1s~59min. 59s)
Sampling frequency	1~99/Continuous
Alarm levels	1~100,000(FED209E Etandard) 2~9(ISO 14464-1 Standard)
Test mode	Single/repeat/continuous/timer/Average
Data Storage	2000
Interface	USB
Operating environment	5~45°C, <90% RH
Storage environment	-20~60°C, <90% RH

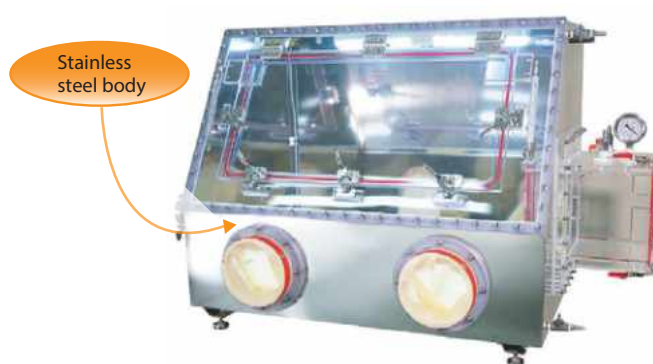
12 Equipment & Tools

• Clean Glove Box



M39

Category	Descriptions	Features
Item code	M71-E-001	Two Glove ports Remove 0.3um particle by 99.97% Enable customizing size and glove port
Size(mm)	1000 x 600 x 600	
Pass box size(mm)	-	
Filtering capacity(%)	99.97(0.3um)	
Power	AC 220V / 60Hz	
Air flow(cfm)	360~410	
Material	Clear reinforced acrylic	
Modified atmosphere	X	
LED lighting	X	
Glove port	2	
Warranty	1 year	



137 Equipment & Tools

Category	Descriptions		Features
Item code	M71-E-002	M71-E-003	- Two Glove ports - Great resistance for acid, alkali, oil(GPC-900)alkali - Enable modified tmosphere funtion - Enable customizing size and glove port
Size(mm)	900 x 600 x 700	900 x 600 x 700	
Pass box size(mm)	250 x 200 x 200	250 x 200 x 200	
Filtering capacity(%)	-	-	
Power	-	AC 220V / 60Hz	
Air flow(cfm)	-	-	
Material	Clear PVC	Clear reinforced acrylic Window and stainless steel body	
Modified atmosphere	O	O	
LED lighting	X	O	
Glove port	2	2	
Warranty	1 year	1 year	

• Wrist Strap Tester



M10-E-003

- LED Display Indicator
- GOOD(Green): 800KΩ ~ 10MΩ
 - HI(Yellow): 10MΩ above
 - LO(Red): 800KΩ below

Specifications

- Test voltage: Regulated 9 volts, DC
- Operating Voltage: 6.5~9 volts
- Accuracy: +/- 5%
- Weight: 145g
- Dimensions: 28mm(T) x 71mm(W) x 90mm(L)

12 Equipment & Tools

• ESD CR Chair



M22-E-001



M22-E-002



M22-E-003



M22-E-004

Descriptions		Item Code	M22-E-001	M22-E-002	M22-E-003	M22-E-004
Material	Seat		PVC + PU Film	PVC + PU Film	PVC + PU Film	PVC + PU Film
	Back		PVC + PU Film	Conductive PP	-	PVC + PU Film
	Body		Aluminum + Metal with hard chrome coating			
	Caster		Metal	Metal	Metal	Metal
Color			Blue	Body: Conductive Black Pad: Blue or Black	Blue or Black	Blue or Black
Surface Resistance (ohm)			10e6-10e8	10e6-10e8	10e6-10e8	10e6-10e8
Resistance to Ground (ohm)			10e6-10e8	10e6-10e8	10e6-10e8	10e6-10e8
Back Seat Size (W X H)			45cm X 40cm	44cm x 55cm	-	39cm x 25cm
Seat Size (W X D)			48cm X 42cm	46cm x 42cm	48cm x 42cm	41cm x 37cm
Height(bottom to Seat)(Adjustable)			45cm ~ 58cm	50cm ~ 59cm	45cm ~ 58cm	45cm ~ 61cm
Filter system			Air Exhausted from sealed cushion is passed through HEPA filter			
Cleanroom Class			1000 ~ 10000	100 ~ 1000	1000 ~ 10000	1000 ~ 10000



M22-E-005



M22-E-007



M22-E-008

Descriptions		Item Code	M22-E-005	M22-E-007	M22-E-008
Material	Seat		Antistatic PU foam	ESD PU leather	ESD PU leather
	Back		Antistatic PU foam	ESD PU leather	ESD PU leather
	Body		Aluminum + Metal with hard chrome coating	Aluminum + Metal with hard chrome coating	Aluminum + Metal with hard chrome coating
	Caster		Metal	Chrome coating to aluminum diecasting	Chrome coating to aluminum diecasting
Color			Black	Blue or Black	Blue or Black
Surface Resistance (ohm)			10e8-10e10	10e5-10e9	10e5-10e9
Resistance to Ground (ohm)			< 10e9	-	-
Back Seat Size (W X H)			37cm x 25cm	44cm x 50cm	44cm x 50cm
Seat Size (W X D)			41.5cm x 40cm	45cm x 40cm	45cm x 40cm
Height(bottom to Seat)(Adjustable)			44cm ~ 60cm	47cm ~ 61cm	44cm ~ 55cm
Cleanroom Class			1000	1000 ~ 10000	1000 ~ 10000

12 Equipment & Tools



M73-E-001



M73-E-002



M73-E-003

Descriptions		Item Code	M73-E-001	M73-E-002	M73-E-003
Material	Seat		ESD Fabric	ESD Fabric	ESD Fabric
	Backrest		ESD Fabric	ESD Fabric	ESD Fabric
	Support(Backrest)		Crome Plating metal	Metal with hard chrome coating	Metal with hard chrome coating
	Base		Crome Plating metal(dia. 300mm)	Crome Plating metal(dia. 320mm)	Aluminum(dia. 320mm)
	Caster		Crome Plating metal	Crome Plating metal	Crome Plating metal
Surface Resistance (ohm)			10e5-10e8	10e5-10e8	10e5-10e8
Seat (W X D)			46cm x 41.5cm	42cm x 44cm	42cm x 47cm
Backrest (W X H)			38cm x 33cm	42cm x 40cm	48cm x 46cm
Features			High quality gas spring Seat Height is adjustable Backrest support is adjustable	High quality gas spring Seat Height is adjustable Backrest support is adjustable Seat Inclination Angle	High quality gas spring Seat Height is adjustable Backrest support is adjustable Seat Inclination Angle

• ESD CR Chair Cover



Item Code: M23-E-001
Size: 1.2T x 1,370mm x 40m ±
Color: Navy blue, Black
Surface resistance: < 10e10 ohm



12 Equipment & Tools

● Solvent Dispenser



M32-E-001



M32-E-002

Capacity: 180ml
Surface resistivity: $10^9 \sim 10^{11}$ ohm/sq
Shape: Square and octagonal designs
Materials: HDPE(bottle) + Stainless Steel(Mechanical Pump)

● Antistatic Brush

Fill material	Horse Hair
Trim length	7/16"
Rows	3 x 7
Handle material	Plywood
Handle length	7.75"
Handle width	7/16"
Brush face length	1.375"
Brush face width	1/4"



M47-E-001

● Tweezers

Complete lines of precision tweezers for the wide range of microelectronics



M15-E-000



13 Handlings & Storages

• Conductive PCB Magazine Rack

Polstar Conductive Magazine Racks are available with several types and sizes to meet customer's needs, and all models are compatible with standard SMT equipment.

Basically, they will be classified with a high temperature type and a normal type by temperature to resist, and a plastic type and a metal type by their materials used.



Item code		Polstar-70		Polstar-70H		Polstar-70HA	Polstar-80M
Descriptions		M07-H-001	M07-H-002	M07-H-005	M07-H-025	M07-H-026	M07-H-027
Size(W) X (L) X (H)mm		317 X 358.7 X 570	317 X 358.7 X 580	317 X 358.7 X 570	317 X 358.7 X 580	317 X 358.7 X 580	316 X 354 X 575
PCB Measurement W x L (mm)	Max.	263 X 355	263 X 355	263 X 355	263 X 355	263 X 355	250 X 330
	Min.(W)	50	50	50	50	50	50
Capacity(pcs) - (mm)		50	51	50	51	51	50
Pitch(mm)		10	10	10	10	10	10
Material		Conductive Engineering Plastic		High Temp. Engineering Plastic	High Temp. Engineering Plastic	High Temp. Engineering Plastic + Aluminum(top, bottom)	Magnesium
Heat Resistance(°C)		90	90	120	120	120	400
Weight/unit(kg)		5.80	5.80	5.80	5.80	6.80	4.20

13 Handlings & Storages



Item code		Polstar-91	Polstar-92	Polstar-94	Polstar-95	Polstar-96	Polstar-97	Polstar-100
Descriptions		M07-H-006	M07-H-007	M07-H-009	M07-H-010	M07-H-011	M07-H-012	M07-H-024
Size (W) X (L) X (H) - mm		318 X 355 X 580	318 x 360 x 570	370 X 352 X 570	380 X 480 X 570	400 X 460 X 575	318 X 355 X 570	530 x 535 x 575
PCB Measurement W x L (mm)	Max.	258 X 330	258 X 330	308 X 330	318 X 450	334 X 430	258 X 330	460 X 535
	Min.(W)	50	50	98	74	65	50	150
Capacity(pcs)		51	50	50	50	50	50	50
Pitch(mm)		10	10	10	10	10	10	10
Material		Conductive ABS	Conductive ABS	Conductive ABS	Conductive ABS	Conductive ABS	Conductive ABS	Conductive ABS + Aluminum(top + bottom)
Heat Resistance (°C)		90	90	90	90	90	90	90
Weight/unit(kg)		5.2	4.8	4.8	7.0	7.0	6.0	9.5

13 Handlings & Storages

• Conductive PC Rack



M05-H-001

Descriptions	M05-H-001
Size (W) x (L) x (H) (ID) mm	179 X 390 X 25
Pitch(mm)	16
Capacity(pcs)	25
Material	Conductive PS
Surface Resistance(ohm)	10e4 ~ 10e6
Weight(g)	500

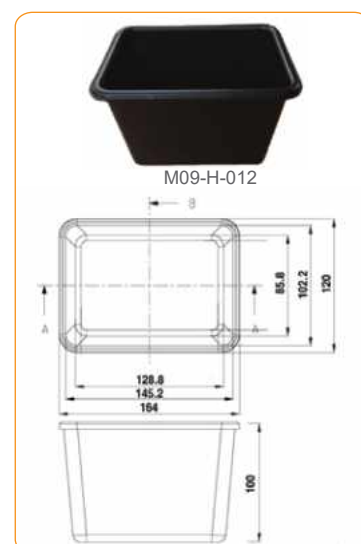
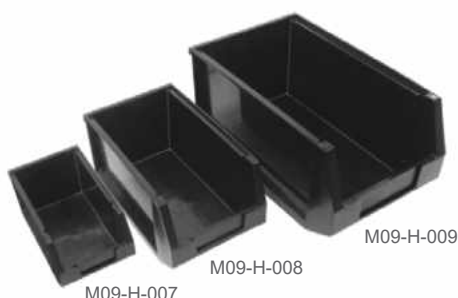
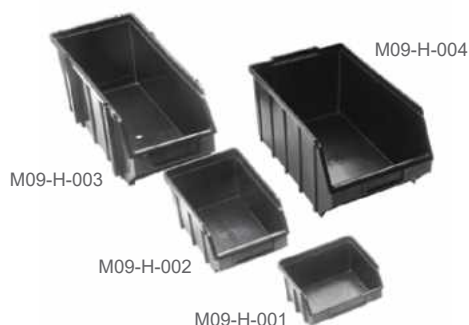
• Conductive PCB Angle Rack



M06-H-001

Descriptions	M06-H-001
Size(mm)	325 x 205 x 93
Pitch(mm)	15
Capacity(pcs)	31
Material	Conductive ABS
Surface Resistance(ohm)	10e4~10e6
Weight(g)	480

• Conductive Parts Box



Item code	M09-H-001	M09-H-002	M09-H-003	M09-H-004	M09-H-007	M09-H-008	M09-H-009	M09-H-012
Descriptions								
Size (ID) (L) X (W) X (H)mm	92 x 76(55) x 44	90 x 141(113) x 63	128 x 210(162) x 112	181 x 315(285) x 150	86 x 157(130) x 76	122 x 225(195) x 109	176 x 341(280) x 141	145 x 86 x 100
Weight(g)	48	112	342	708	142	292	732	100
Surface Resistance (ohm)	10e4 ~ 10e6							
Material	Conductive PP							

13 Handlings & Storages

• Conductive Tray



Item code	M10-H-005	M10-H-006	M10-H-007	M10-H-008
Descriptions				
Size (W)x(L)x(H)mm	355 x 485 x 45	255 x 355 x 45	215 x 280 x 40	150 x 200 x 40
Weight(g)	412g	328g	158g	84g
Surface Resistance (ohm)	10e4~10e6			
Material	Conductive PS			

• Conductive Chip Box



Item code		M15-H-004	M15-H-005	M15-H-006	M15-H-007	M15-H-008	M15-H-009
Descriptions	In	14(Dia) x 17(H)	13 x 13x 17	29 x 13 x 16	29 x 41 x 16	61 x 41 x 16	61 x 41 x 34
	Out	18(Dia) x 22(H)	16.8 x 28.8 x 23.5	32.6 x 28.8 x 23.5	32.6 x 56.5 x 23.5	64.5 x 56.5 x 23.5	64.5 x 56.5 x 41.5
Weight(g)		2	5	11	15	24	36
Surface Resistance (ohm)		10e4 ~ 10e6					
Material		Conductive PP					

• Conductive Cabinet



M16-H-002

M16-H-003

M16-H-004

M16-H-006

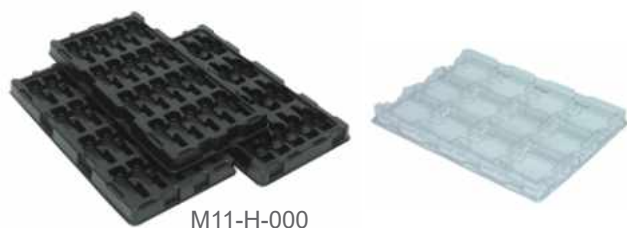
M16-H-005

M16-H-007

Item code		M16-H-002	M16-H-003	M16-H-004	M16-H-005	M16-H-006	M16-H-007
Descriptions	Drawer	73 x 146 x 32	73 x 146 x 32	122 x 212 x 62	89 x 115 x 139	139 x 134 x 189	121 x 210 x 60
	Out	82 x 150 x 41	159 x 150 x 41	260 x 218 x 72	101 x 120 x 150	151 x 140 x 200	400 x 216 x 290
Weight(g)		164	290	1030	450	860	3028
Surface Resistance (ohm)		10e4 ~ 10e6					
Material		Conductive PP					

13 Handlings & Storages

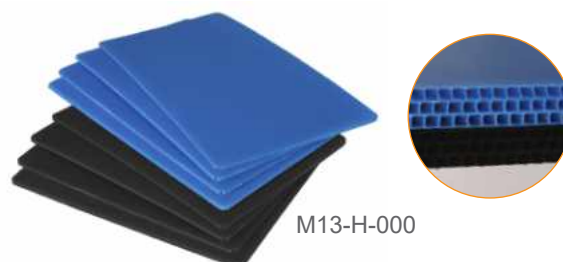
• ESD Vacuum Foaming Tray



M11-H-000

Material: Conductive black PP & PS, Transparent ESD PET
Custom sizes and designs

• Conductive Corrugated Sheet



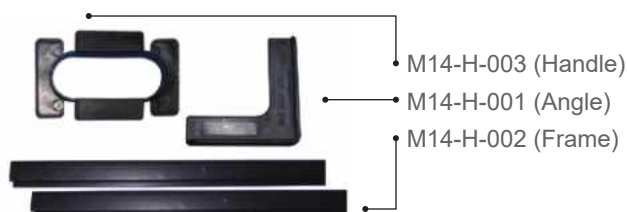
M13-H-000

Material: Conductive PP
S/R: 10e4~10e6 ohm
Thickness: 3T, 4T, 5T, 10T
Size: 1100 x 1100, 1200 x 2400, 1220 x 2440 mm

• Conductive Corrugated Box



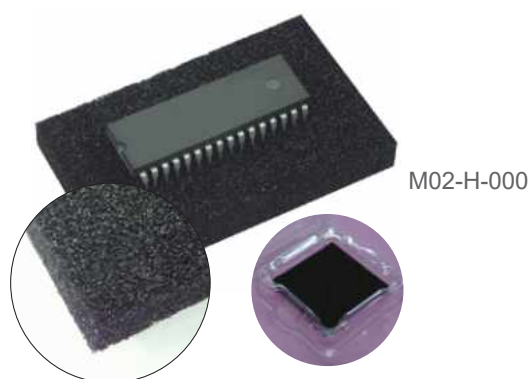
M12-H-000



Material: Conductive PP
S/R: 10e4~10e6 ohm
Custom sizes

• Conductive Foam

The high quality of cross-linked conductive foams are created when carbon-compounded plastic resin is melted and expanded by the dispersion of gas in the liquid resin. The 4 types of Foams, PE, PU, EVA and AR, are available and they can be used in ESD packaging Industries to protect sensitive IC chips and finished devices from ESD damage and outer impact during transportation and storage.



M02-H-000

Descriptions \ Item code	M01-H-000	M02-H-000	M03-H-000	M18-H-000
Material	PE	PU	EVA	AR
Density(g/cm³)	0.045	0.041	0.16	0.045
Surface Resistance (ohm)	10e4~10e6			
Thickness(mm)	2~40	4,5,8,10	2~25	5~60
Size(m)	1 x 1.8	1 x 2	1 x 1.5	1.2 x 2
Weight/(m³)	45kg	41kg	160kg	45kg

• ESD Control PP Strap



M04-H-001

Descriptions	M04-H-001
Size	0.7mm(T) x 12mm(W) x 1500m(L)
Color	Black
Surface Resistance (ohm)	10e5 ~ 10e8
Packing	2 rolls/ctn, 18 kgs/ctn

13 Handlings & Storages

• ESD Squeeze Bottle



S/R: $\leq 10e9$ ohm
Material: Polyethylene (PE)
Capacity: 60ml

Item code	Capacity	Needle	Color
M26-H-001	60ml	16	Yellow
M26-H-002	60ml	20	Yellow
M26-H-003	60ml	26	Yellow
M26-H-004	60ml	16	Sky Blue
M26-H-005	60ml	20	Sky Blue
M26-H-006	60ml	26	Sky Blue



S/R: $\leq 10e9$ ohm
Material: Polyethylene (PE)
Capacity: 60ml

Item code	Capacity	Color
M26-H-007	250ml	Yellow
M26-H-008	500ml	Yellow
M26-H-009	250ml	Sky Blue
M26-H-010	500ml	Sky Blue



S/R: $\leq 10e9$ ohm
Material: Polyethylene (PE)
Capacity: 60ml

Item code	Capacity	Color
M26-H-011	250ml	Yellow
M26-H-012	500ml	Yellow
M26-H-013	250ml	Sky Blue
M26-H-014	500ml	Sky Blue



S/R: $10e4 \sim 10e10$ ohm
Material: LDPE

Item code	Capacity	Color
M26-H-015	500ml	Yellow

13 Handlings & Storages

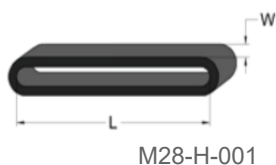
• ESD Spray Bottle



S/R: 10e4 ~ 10e10 ohm
Material: LDPE

Item code	Capacity	Color
M27-H-001	250ml	Yellow
M27-H-002	500ml	Yellow
M27-H-003	250ml	Sky Blue
M27-H-004	500ml	Sky Blue

• ESD Rubber Band



M28-H-001

S/R: 10e5 ~ 10e8 ohm
Size : 1.7mmT x 12mm x 120mm(0.5" x 4.75")
Color: Black
Packing: 150-170pcs/bag, kg

• ESD Strap

Black polypropylene hook and loop strap secures JEDEC trays using a D-Ring fastening system. The ESD version is designed with a metal D-Ring to insure a complete static loop. Unlike other "dipped" products that have a limited shelflife, our ESD strap has permanent ESD properties on both sides with ESD logo on the strap.



M29-H-001

S/R: 10e9 ohm
Size : 25mm x 508mm
Color: Black
Weight: 22.7g/pc
Packing: 10pc/bag
Constructions: Hook & Loop nylon strap with a metal D-Ring

• ESD Tool Box



M30-H-001

S/R: 10e5 ~ 10e6 ohm
Size : 255mm x 125mm x 100mm(H)

14 Filter & Filter Cartridge

• Medium Filter(Box type)



Media	Micro Glass Fiber
Frame	Particle Board
Separator	Aluminum
Sealant	Polyurethane(PU) Resin
Gasket	Neoprene Sponge

• Medium Filter(Header type)



Media	Micro Glass Fiber
Frame	Galvanized Steel
Separator	Aluminum
Sealant	Polyurethane(PU) Resin
Gasket	Neoprene Sponge

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Filter & Filter Cartridges

Box type Size(mm)			Head type Size(mm)			Pressure drop(mmAq)		Air Volume(CMM)		Capture Efficiency
W	L	D	W	L	D	Initial	Final	General	Various	0.3um, %
610	305	150	594	287	150	17	30	14	21	95
610	610	150	594	594	150			28	42	
610	305	292	594	287	292			28	42	
610	610	292	594	594	292			56	84	
610	305	150	594	287	150	15	30	14	21	85
610	610	150	594	594	150			28	42	
610	305	292	594	287	292			28	42	
610	610	292	594	594	292			56	84	
610	305	150	594	287	150	13	30	14	21	65
610	610	150	594	594	150			28	42	
610	305	292	594	287	292			28	42	
610	610	292	594	594	292			56	84	

• Hepa Filter(Standard)



Media	Micro Glass Fiber
Frame	Particle Board, Plywood, AL
Separator	AL. Kraft Paper
Sealant	Polyurethane(PU) Resin
Gasket	Neoprene Sponge

Head type Size(mm)			Pressure drop(mmAq)		Air Volume	Capture Efficiency
W	L	D	Initial	Final	CMM	0.3um, %
305	305	150	25	50	4	99.97
610	305	150			7	
610	610	150			17	
610	762	150			22	
610	915	150			26	
610	1220	150			32	
305	305	292			7	
610	305	292			17	
610	610	292			32	

14 Filter & Filter Cartridge

• Hepa Filter(Mini Pleat type)



Media	Micro Glass Fiber
Frame	Particle Board. Plywood. AL
Separator	-
Sealant	Polyurethane(PU) Resin
Gasket	Neoprene Sponge

Head type Size(mm)			Pressure drop(mmAq)		Air Volume	Capture Efficiency
W	L	D	Initial	Final	CMM	0.3um, %
305	305	75	25	50	4	99.97
610	305	75			7	
610	610	75			17	
610	762	75			22	
610	915	75			26	
610	1220	75			32	

• Ulpa Filter(Standard)



Media	Micro Glass Fiber
Frame	Particle Board. Plywood. AL
Separator	AL. Kraft Paper
Sealant	Polyurethane(PU) Resin
Gasket	Neoprene Sponge

Head type Size(mm)			Pressure drop(mmAq)		Air Volume	Capture Efficiency
W	L	D	Initial	Final	CMM	0.3um, %
610	610	75	25	50	11	99.999997
610	915	75			16	
610	1220	75			18	
610	610	150			11	
610	762	150			13	
610	915	150			16	
610	1220	150			22	
610	610	75			15	
610	915	75			21	
610	1220	75			24	
610	610	150			25	
610	762	150			32	
610	915	150			38	
610	1220	150			42	

14 Filter & Filter Cartridge

• Normal Grade

PRE I, String Wound Depth Filter Cartridge

PRE I offers a gradual pressure increase during cartridges life versus surface type media that have an abrupt flow cut off when loaded. It provides true depth filtration utilizing hundreds of tapered filtering passages of controlled size and shape.

As the cartridges are wound, each layer of roving is napped to increase filtration capabilities. As a result, each layer of roving contributes to true depth filtration by trapping its share of particles. In addition, irregular blinding is assuring both longer cartridge lifespan and full cartridge utilization.



M01-K-000

Features

- Available in a wide range of materials and micron rating.
- The kinds of media materials are polypropylene, polyester, acryl, cotton, fiber glass, fibrillated polypropylene.
- A broad range of media provides excellent compatibility with the variety of chemicals, organic solvents, animal, petroleum and vegetable oils.
- Advanced develop filter media assure fiber migration control and non-contamination of filtrate.
- Minimized leakage of fiber using inner core cover (applied from 0.5 to 25 micron)
- In cartons, sealed in single poly bags.
- Manufactured according to the rules of ISO 9001 Quality Control system.

PRE II, Non-Woven Depth Filter Cartridge

PRE II is one of the best economical high purity filter cartridges available. Featuring a graded density matrix of all polypropylene fibers, it provides consistent filtration for the wide variety of fluids. Continuous fiber matrix prevents media migration and ensures consistent production yield and overall quality function performance. Fixed pore structure provides efficiency integrity and optimum particle retention. No surfactants or binders are contained, which are to interrupt product quality or cause foaming and thermally bonded non-woven fiber constructions provide superior filtration and often eliminate the need for circulation to achieve product clarity.



M02-K-000

Features

- It is useful for high temperature and high pressure process, as used inner core.
- Normal micron rating and eight removal ratings (0.5, 1, 3, 5, 10, 25, 50, 75, 100 micron).
- In cartons, sealed in single poly bags.
- Manufactured according to the rules of ISO 9001 Quality Control system.

14 Filter & Filter Cartridge

PRE III, Melt-Blown Depth Filter Cartridge

PRE III has strong chemical resistance because of all polypropylene material compositions. Also, randomized 3-dimensional constructions provide high flux and long lifespan.



M03-K-000

Features

- Multi-layer structures : High Dirt Holding Capacity
- FDA complied polypropylene material : Non foaming, No pre-rinsing.
- 100% polypropylene : Useful for the wide range of process fluids.
- High flow-rate & low differential pressure.
- Fixed pore structure provides efficiency integrity and optimum particle retention.
- Normal micron rating and seven removal ratings (0.5, 1, 5, 10, 20, 50, 100 micron).
- In cartons, sealed in single poly bags.
- Manufactured according to the rules of ISO 9001 Quality Control system.

PRE IV, Super Flow Depth Filter Cartridge

PRE IV is designed and developed to serve superior flow. Thanks to high effective filtration area, it reduces initial investment expenses, installation space and maintenance expenses.



M04-K-000

Features

- Six removal ratings
- All polypropylene constructions
- Useful for bulk production process
- No leakage of material
- The complex structure of variant porous non-wovens
- Absolute low difference of pressure
- Long service life
- Manufactured according to the rules of ISO 9001 Quality Control system.

14 Filter & Filter Cartridge

• Semi-Absolute Grade

COMBO I, Wound Semi-Absolute Depth Filter Cartridge

COMBO I was developed for the high viscose liquid industries and the magnetic coating industry. It is the first true absolute depth filter made. Its constructions are unique in that feature a capture mechanism of the main media as polypropylene melt blown sheet, fiber glass sheet and viscous rayon sheet.



Features

- Featuring a graded density matrix of main media, so they provide high contaminant holding capacity.
- Available in a wide range of materials and micron rating.
- Absolute micron rating from 1.4 micron to 9.5 micron and eight micron ratings.
- The kinds of wound media materials are polypropylene, bleached cotton.
- Advanced develop filter media assure fiber migration control and non-contamination of filtrate.
- Minimized leakage of fiber, used inner core cover.
- Manufactured according to the rules of ISO 9001 Quality Control system.

COMBO II, Non-Woven Semi-Absolute Depth Filter Cartridge

COMBO II is one of the best economical high purity filter cartridges available. No surfactants or binders are contained, which are to interrupt product quality or cause foaming and thermally bonded non-woven fiber constructions provide superior filtration and often eliminate the need for circulation to achieve product clarity.



Features

- Featuring a graded density matrix of all polypropylene fibers, they provide consistent filtration for the wide variety of fluids.
- Continuous fiber matrix prevents media migration and ensures consistent production yield and overall quality function performance.
- Fixed pore structure provides efficient integrity and optimum particle retention.
- It is useful for high temperature and high pressure process by using inner core.
- Absolute micron rating and five removal ratings 4.5, 6, 10, 20, 40 micron).
- In cartons, sealed in single poly bags.
- Manufactured according to the rules of ISO 9001 Quality Control system.

14 Filter & Filter Cartridge

CLEAN A, Activated Carbon Depth Filter Cartridge

CLEAN A is the industry standard for specialized industrial and consumer water treatment applications.

Activated carbon has been found to extremely effective in reducing or removing organic chemicals, THM's PCB's and other similar halogenated organic compounds, as well as bad taste and odor.

PT-ATC, activated carbon filter is designed and developed to serve as dual purpose filter for carbon treatment as well as dusts for various fluids and liquids. There are 2 kinds of activated carbon cartridges in PT-ATC. One is a Depth Activated Carbon(D.A.C) and the other is an Activated Carbon Fiber (A.C.F).

PT-ATC can be applied to general housing easily by standard cartridge size.

Features

Depth Activated Carbon (D.A.C)

- Depth carbon's raw material is similar to General Activated Carbon (G.A.C.)
- Finery pulverized carbon powder blended with cellulose.
- Higher density and effective area than G.A.C.
- Higher absorption efficiency than G.A.C.

Activated Carbon Fiber (A.C.F)

- Produced by burning or activating organic fiber
- Vast area of average covering and regular and fine process.
- High speed for absorption and detachment, more than twice compared to granular and sinks.
- Resistance of absorption movement into and out of adsorbents minimized because of small diameters



M08-K-000

●PORFLUX I

PORFLUX I pleated filter cartridge filters are designed for application where high flow rate and precise particles removal rating is required. This filters which is designed with 83mm out diameter have two times more filtration area comparison with normal filters. Highly recommended for PDP, LCD, AM-OLED(Active Matrix Organic Light-Emitting Diode), etc.

Features

- Suitable for 6~7 generation LCD
- Suitable for mass particle interception & large capacity processes
- Thermal bonding
- Free of surfactants, binders and adhesives
- Manufactured in clean room environment (class 1,000)



M10-K-000

14 Filter & Filter Cartridge

● PORFLUX II

PORFLUX II pleated filter cartridge filters are designed for application where high flow rate and precise particles removal rating is required. This filters which is designed with 131mm out diameter have five times more filtration area comparison with normal filters. Highly recommended for generation from 7 to 8 of PDP, LCD, AM-OLED (Active Matrix Organic Light-Emitting Diode), etc.

Features

- Suitable for 7~8 generation LCD
- Large filtration surface area
- High flow rate and efficiency
- Low maintenance cost
- Manufactured in clean room environment (class 1,000)



M11-K-000

● PORFLUX III

PORFLUX III pleated filter cartridge filters are designed for application where high flow rate and precise particles removal rating is required. This filters which is designed with 152mm out diameter have ten times more filtration area comparison with normal filters.

Highly recommended for not only generation from 10 to 11 of PDP, LCD, AM-OLED(Active Matrix Organic Light-Emitting Diode) but also sea water desalination, pre-filtration of RO system and power generation, etc.

Features

- Suitable for 10~11 generation LCD
- Ultra capacity
- Very long service time
- Fewer change-out
- Suitable for high pressure application



M12-K-000

● PORFLUX IV

PORFLUX IV The High-Flow PORFLUX IV Filters are designed for bulk N2 and CDA application in the TFE-LCD, OLED and Semiconductor industries.

Features

- Suitable for TFT-LCD, OLED, Semiconductor
- Ultra capacity
- Very long service time
- High flow rate vs. differential pressure



M13-K-000

14 Filter & Filter Cartridge

● PORPRO I

PORPRO I cartridges are made of 100% pure polypropylene, polyethylene and nylon depth matrix that offers nominal retention grade. This filters with multi graded fiber that yields progressive finer particles retention through the depth and life of media. This filters are available in a range of formats, pore sizes, lengths

Features

- High particle retention
- High flow rates and superior throughputs
- Good chemical compatibility
- All materials are FDA listed for meeting with food and beverages
- Thermal bonding



M14-K-000

● PORPRO II

PORPRO II cartridges are pleated, depth all polypropylene with multi-layers media. This filters are ideally suited for the removal of agglomerated particles and gels from slurries used in the chemical mechanical polishing (CMP) of oxide, tungsten and copper. This is accumulated by technical know-how for high flow rate and efficiency filtration.

Features

- Superior high flow rate
- Good removal capability of gel and viscous liquids
- Free of surfactants, binders and adhesives
- All materials meet FDA listed for food and beverages
- Thermal bonding



M15-K-000

● PORPRO III

PORPRO III cartridges are made of 100% pure polypropylene depth matrix that offers absolute retention grade. This filters with multi graded fiber that yields progressive finer particles retention through the depth and life of media. This filters are available in a range of formats, pore sizes, lengths and connections to suit your individual application.

Features

- Absolute filtration
- Good chemical compatibility
- Melt-blown polypropylene media protects against shedding and particle unloading
- Thermal bonding
- All materials meet FDA listed for food and beverages
- Manufactured in clean room environment (class 1,000)
- Manufactured by ISO 9001 quality control system



M16-K-000

14 Filter & Filter Cartridge

● PORLAS

PORLAS cartridges are pleated with absolute grade of fiber glass. This is designed to provide efficient particles removal in both liquids and gases system. The use of glass fiber media as a vent filter can be used in applications where a sterile environment must be maintained but an exchange of gases is critical such as bioreactors, isolation or environmental chambers and fermentation tanks, etc.

Features

- Excellent chemical compatibility and thermal resistance
- Superior efficiency
- High dirt holding capacity
- Long service time
- High flow rate



M17-K-000

● PORMIN

PORMIN cartridges are constructed with a proprietary polypropylene, PES, PTFE and micro fiber depth. These filters offer flow rates and contaminant holding capabilities superior to those of other all competitor filters use in general industrial and micro electronic. PORMIN cartridges are suitable for small flow rate applications.

Features

- High particle retention
- High flow rates and superior throughputs
- Good chemical compatibility
- Thermal bonding
- Manufactured in clean room environment
- Manufactured by ISO 9001 and ISO 14001 quality control system



M18-K-000

● PORNON

PORNON cartridges are made of high purity grade of nylon membranes for use in final filtration where high purity and efficient particles removal is needed. The intrinsically hydrophilic nature of nylon membranes result in easy wetting across the membrane. Hydrophilic nylon membrane and pure polypropylene construction provides excellent chemical compatibility and suitable for wide range of applications.

Features

- Highly hydrophilic property
- Suitable for water cleaning process
- No pre-wetting
- Good chemical compatibility
- Long life time
- Low extractable



M19-K-000

14 Filter & Filter Cartridge

• PORPES

PORPES cartridges are made of casted sulfonated PES(Polyethersulfone) polymers. This is designed for final filtration where absolute retention is required or final filtration to remove extremely fine particles. Inherently hydrophilic and the high asymmetrical xed pore structure of PES membrane offers absolute filtration such as food & beverage, micro-electronic, bio-technology and pharmaceutical, etc.

Features

- Highly asymmetric pore structure
- Suitable for water treatment process
- Inherently hydrophilic, good chemical compatibility
- Manufactured by ISO 9001 quality control system
- All polypropylene components meet the specifications for biological safety as per the USP for Class VI-121 °C PLASTICS (Gaskets/O-ring excluded)

M20-K-000



• PORTEF

PORTEF cartridges are made of ePTFE(expanded Polytetrafluoroethylene) membrane. This filters can be two kinds of products such as hydrophobic or hydrophilic one. Hydrophobic PTFE membrane is very useful for air filtration and venting process. Hydrophilic one should be made from chemical surface treatment or alcohol pre-treatment. Make it the ideal choices for broad range of liquid and bulk air filtrations.

Features

- Excellent chemical compatibility and heat-resisting property
- Suitable for gas filtration, ventilation and liquid filtration
- Hydrophobic and hydrophilic
- High particle removal efficiency
- Low extractable

M21-K-000



157 Filter & Filter Cartridges

• PROCAP

PROCAP are suitable for a wide range of chemicals and solvents industrial as well. PROCAP can be used for the removal of toxic and harmful material. PROCAP assembly is a compact capsule, ideally suited for the filtration of point-of-use CMP slurry.

Features

- Minimized dead space for complete and easy venting
- High flow rates and superior throughputs
- Good chemical compatibility
- Manufactured in clean room environment
- Manufactured by ISO 9001 and 14001 quality control system



M22-K-000

15 Wire Shelves and Utility Carts

• Wire Shelves



Pole

- Chrome plated steel pole
- 25.4mm dia. X 1.2mm(T)
- 9 different lengths(450mm~2200mm)



Wire Shelf

- Chrome plated steel wire
- Wire - 6mm, 3.5mm, 4.5mm
- Load capacity - 250kgs/shelf



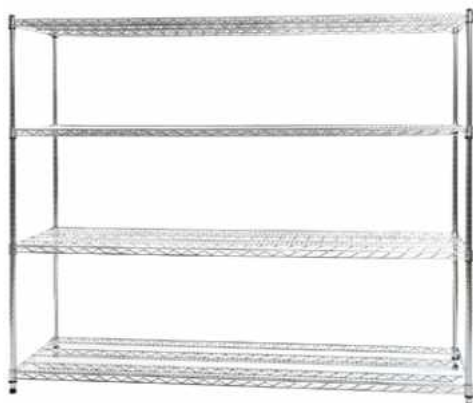
* Stainless steel(SUS 304) material is also available on request

158

Wire Shelves and Utility Carts



(mm)					
350	450	530	610	Shelf	Pole
	③	⑩	⑰	610	450
	④	⑪	⑱	760	600
	⑤	⑫	⑲	910	750
	⑥	⑬	⑳	1070	900
	⑦	⑭	㉑	1220	1200
①	⑧	⑮	㉒	1520	1500
②	⑨	⑯	㉓	1820	1800
① - 350 x 1520					1900
⋮					2200
㉓ - 610 x 1820					



Various size and designs

15 Wire Shelves and Utility Carts

• Utility Carts



(mm)					
450	530	610	Shelf	Pole	
①	⑧	⑮	610	750	
②	⑨	⑯	760	900	
③	⑩	⑰	910		
④	⑪	⑱	1070		
⑤	⑫	⑲	1220		
⑥	⑬	⑳	1520		
⑦	⑭	㉑	1820		

Type A

- 3 shelves with U handle in 1 side
- Total height: 1050mm
- Load capacity: 250kgs

(mm)					
450	530	610	Shelf	Pole	
①	⑧	⑮	610	750	
②	⑨	⑯	760	900	
③	⑩	⑰	910		
④	⑪	⑱	1070		
⑤	⑫	⑲	1220		
⑥	⑬	⑳	1520		
⑦	⑭	㉑	1820		

Type B

- 3 shelves with U handles in 2 sides
- Total height: 1050mm
- Load capacity: 250kgs



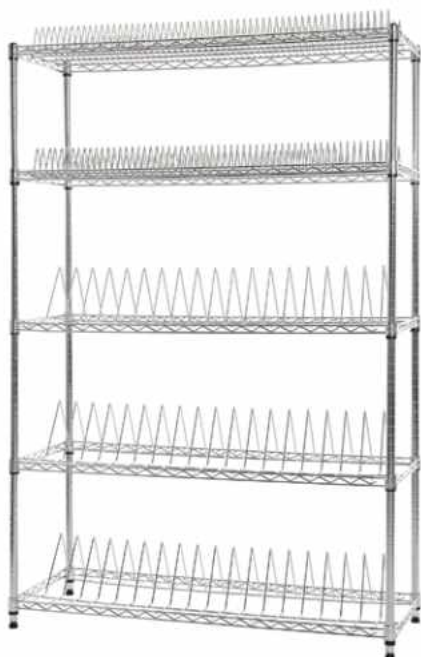
(mm)					
450	530	610	Shelf	Pole	
①	⑧	⑮	610	750	
②	⑨	⑯	760	900	
③	⑩	⑰	910		
④	⑪	⑱	1070		
⑤	⑫	⑲	1220		
⑥	⑬	⑳	1520		
⑦	⑭	㉑	1820		

Type C

- 2 shelves with 1 side U handle
- Total height: 1050mm
- Load capacity: 250kgs

15 Wire Shelves and Utility Carts

• Wire Reel Shelves



(mm)

Capacity (pc)	Reel Shelves		Pitch size
	450 x 910	450 x 1220	
Small(double peaks)	80	112	20
Large(single peak)	13	18	60

(mm)

450	Shelf	Pole
①	910	1800
②	1220	

Pole

- Chrome plated steel pole
- 25.4mm dia. X 1.2mm(T)

Reel Wire Shelves

- Chrome plated Steel Wire
- Wire - 6mm, 3.5mm, 4.5mm

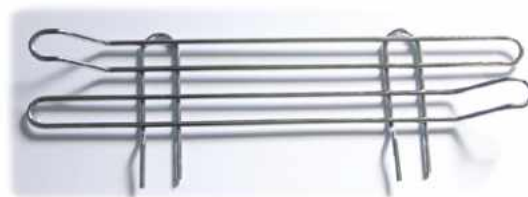
• Accessories



Handle



Supporting Bar



Guardrail

Castor



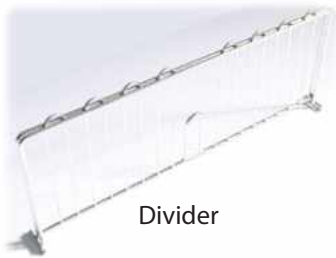
(mm)

Supporting Bar	Guardrail	Handle	Caster
Length			Dia(Height)
350	350	350	50(60)
450	450	450	76(100)
530	530	530	127(150)
610	610	610	
760	760		
1070	1070		
1220	1220		
1520	1520		
1820	1820		

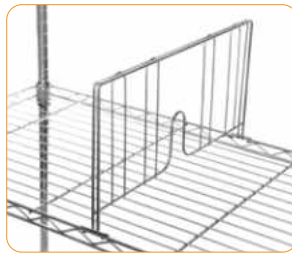
15 Wire Shelves and Utility Carts



Split Joint



Divider



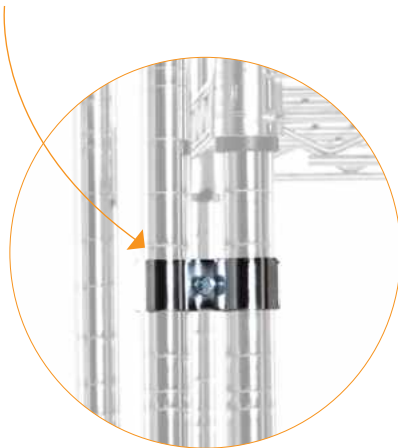
Donut Bumper



Clamp



N Hook



16 SMT Products

● Solder Paste



Item Code	Model No.	Feature	Item Code	Model No.	Feature
M02-O-001	OM520	Lead Free Paste Solder Alloy: SAC305 (Sn96.5/Ag3/0.5Cu) Melting Point: 217-220°C	M02-O-005	OM525	Lead Free&Low Temp Pate Solder Alloy: SBX02(OM525) Melting Temp 140°C
M02-O-002	SACX0300	Halogen Zero High Tack force life	M02-O-006	OM385SM	Power Size: Type 4 (20-38um) Halogen Zero
M02-O-003	SACX0307	Excellent Void Performance Long stencil life	M02-O-007	OM234HF	Reduce reflow process cycle time Reduce Energy Consumption
M02-O-004	OM353	Syringe packing for OM234HF			Potential elimination bar solder

● Solder Bar (Alloys)



Features

- Vaculoy alloy conditioning process
- Solder bar, chunks and anodes preformwith solid wires
- High purity
- Excellent Solderability
- Low oxides, Low dross

Item Code	Model No.	Solder Composition	Melting Point(°C)
M01-O-001	SACX0307	99Sn/0.3Ag/0.7Cu	227
M01-O-002	63Sn/37Pb	63Sn/37Pb	183
M01-O-003	SCX07	99.3Sn/0.7Cu	227
M01-O-004	SAC305	96.5Sn/3Ag/0.5Cu	217-220

● Cored Wire



Features

- For all hand and automated soldering, components attach and rework operation
- Minimal non-corrosive flux residues for high soldering efficiency
- Even core flux distribution
- Good solderability, strong joints

Item Code	Solder Wire	Solder Composition	Melting Point(°C)	Flux Amount
M11-O-001	63Sn/37Pb	63Sn/37Pb	183	1) 2.2%
M11-O-002	SCX07	99.3Sn/0.7Cu	227	
M11-O-003	SACX0307	99Sn/0.3Ag/0.7Cu	227	2) 3.3%(Order by MOQ)
M11-O-004	SAC305	96.5Sn/3Ag/0.5Cu	217-220	

17 Compound & Sheet

• Compound



Conductive PE Compound

Conductive thermoplastic compound based on polyethylene polymer and a special conductive carbon black

ESD PE Compound

Permanent ESD polyethylene compound

Features

- ① Excellent conductivity
- ② Various color available
- ③ Smooth & Soft surface
- ④ Low flow
- ⑤ Good electrostatic
- ⑥ Flexible film
- ⑦ High tear strength
- ⑧ Rigid film
- ⑨ Discharge performance
- ⑩ High flow
- ⑪ Medium flow

Applications

- ① Film & Sheet
- ② Anti-static PE film (PE Bag)



Item	ASTM	Unit	Conductive PE Compound	ESD PE Compound			
Standard Grades	-		PE F-1300	BSB8A	BSB8B	BSB8C	BS038BK
Specific Gravity	D792	-	1.07	0.96	0.96	0.96	0.94
Melt Index	D1238	g/10min	1.7	0.15	0.18	0.3	4.16
Tensile Strength	D638	kgf/cm ²	180	230	250	230	100
Flexural Strength	D790	kgf/cm ²	140	190	190	180	70
Flexural Modulus	D790	kgf/cm ²	7,000	9,000	9,500	9,000	32,000
Izod Impact Strength(Notched)	D256	kg.cm/cm	N.B.	N.B.	N.B.	N.B.	N.B.
HDT @ 66 psi	D648	°C	60	62	60	55	52
Surface Resistivity	D257	10E Ω/sq	4	9.2	8.4	8.1	10.1
Features			①, ③	②, ⑧, ⑫	②, ⑤, ⑧, ⑪	②, ⑤, ⑩	②, ⑥
Applications			①	②	②	②	②

17 Compound & Sheet

Conductive PP Compound

Conductive thermoplastic compound based on polypropylene polymer and conductive carbon black

Reinforced PP Compound

Thermoplastic compound based on polypropylene polymer and special fillers. Pigment master batch that is suitable for PP can be used to add color, but the effect on other properties should be confirmed by trial and error.

ESD PP Compound

Permanent ESD polypropylene thermoplastic compound

Available in natural color.

Features

- ① Excellent conductivity
- ② Various color available
- ③ White compound
- ④ Smooth surface
- ⑤ Easy processing
- ⑥ Good stiffness
- ⑦ High impact
- ⑧ High flow

Applications

- ① Sheet
- ② Injection molding
- ③ High strength PP sheet for injection molding
- ④ Corrugated sheet
- ⑤ General purpose
- ⑥ Antistatic PP case



Item	ASTM	Unit	Conductive PP Compound				Reinforced PP Compound	ESD PP Compound
Standard Grades	-		PP E-2001	PP E-2001A	PP E-2001S	PP I-2005H	P880A	P058A
Specific Gravity	D792	-	1.1	1.1	1.15	1.1	1.24	0.92
Melt Index	D1238	g/10min	1	1.2	0.9	3.5	N.A.	7.6
Tensile Strength	D638	kgf/cm ²	310	320	260	280	275	250
Flexural Strength	D790	kgf/cm ²	420	430	330	360	400	250
Flexural Modulus	D790	kgf/cm ²	23,000	24,000	20,000	21,000	38,500	9,000
Izod Impact Strength(Notched)	D256	kg.cm/cm	30	25	50	10	5	4.5
HDT @ 66 psi	D648	°C	115	115	100	120	135	83
Surface Resistance	D257	10E Ω	3	3	3	4	N.A.	9
Features			①, ④	①, ④, ⑥	①, ④, ⑦	①, ⑤, ⑧	②	③
Applications			①	①, ④	①	②	③, ⑤	③, ⑥

Conductive PS Compound

Permanent ESD polystyrene thermoplastic compound

Features

- ① Black compound
- ② Various color available
- ③ Excellent conductivity
- ④ Good electrostatic
- ⑤ Wear resist
- ⑥ Smooth surface
- ⑦ Good stiffness
- ⑧ Easy processing
- ⑨ Discharge performance
- ⑩ Hinge
- ⑪ High impact
- ⑫ High conductivity
- ⑬ Extrusion

Applications

- ① Conductive PS sheet
- ② Antistatic PS sheet
- ③ Sheet
- ④ Injection molding
- ⑤ Carrier tape
- ⑥ Module tray
- ⑦ Plastic reel

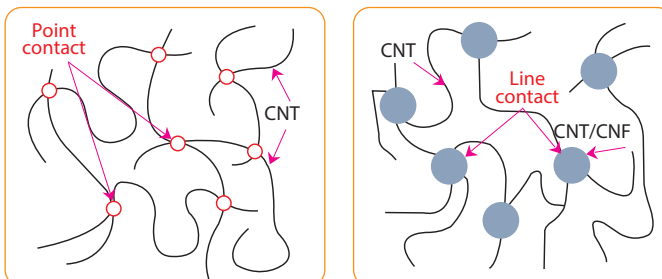


Item	ASTM	Unit	Conductive PS Compound								ESD PS Compound	
Standard Grades	-		PS E-3007J	PS E-3007J-1	PS I-3300R	PS I-3202	PS 3145C	PS 3156D	PS 3145S	PS 3156S	R048BK	R058BK
Specific Gravity	D792	-	1.12	1.15	1.14	1.14	1.13	1.1	1.11	1.09	1.03	1.03
Melt Index	D1238	g/10min	6	5	3	5	2	2.2	2	2.1	4.62	14.16
Tensile Strength	D638	kgf/cm ²	200	210	250	220	215	190	180	165	200	180
Flexural Strength	D790	kgf/cm ²	300	310	380	300	330	310	245	230	300	300
Flexural Modulus	D790	kgf/cm ²	19,000	20,000	20,000	17,000	23,000	17,500	12,200	10,900	14,500	14,000
Izod Impact Strength	D256	kg.cm/cm	10	8	8	8	10	8	13	14	5	5
HDT @ 66 psi	D648	°C	80	85	85	85	85	85	80	80	75	77
Surface Resistance	D257	10E Ω	4	3	4	4	4	5~6	4	5~6	9	9
Features			③, ⑥, ⑪	③, ⑥, ⑪	③, ⑦	③, ⑧	①, ④, ⑨, ⑬	①, ④, ⑩, ⑬	②	②, ⑤	②, ⑤	②, ⑤
Applications			③	③	④, ⑦	④	①, ⑤	①, ⑤	①, ⑤	①, ⑤	②, ⑥	②, ⑥

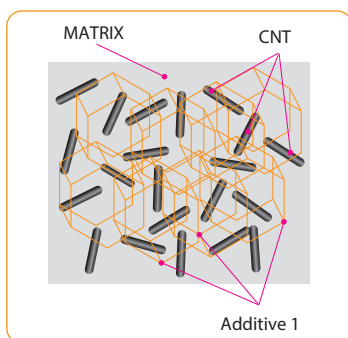
17 Compound & Sheet

• ESD Compound with new technologies

The conductive networks were formed by mutually connecting the conductive filler through the method of point or line contacts. However, as the contact area of the connection part is extremely small, especially if the matrix contracted or were acted upon by tensile strength, the conductive network would be cut off. It means that either conductivity could not be materialized or it would be markedly lowered.



In order to resolve the limitation and the problems of existing technologies, we achieved stable conductivity by three dimensional connecting the conductive fillers to the matrix through the ESD additives added. In addition, we realized incidental effects that enhanced mechanical properties, including the strength and the internal abrasion of the materials.



SEBS(Styrene Ethylene Butadiene Styrene) Compound

*SEBS + ESD additives + CNT(Conductive Nano Tube)

TPU(Thermoplastic PolyUrethane) Compound

*TPU + ESD additives + CNT(Conductive Nano Tube)

Features

- Stable dispersion of CNTs for the prevention of ESD
- Control of surface resistivity to meet ESD requirement
- Able to adjust hardness while satisfying ESD prevention requirement
- Maintaining stable surface resistivity against contraction or additional tensile strength to the compound

Applications

- Packing materials
- ESD hose
- Stylus pen tip
- Electric cables
- ESD housing
- ESD mats
- ESD finger cot
- ESD film
- Carrier rollers

17 Compound & Sheet

Item	Unit	Hardness	Surface Resistance	Surface Resistance (After 20~40% elongation)	Hardness	Item
		-	ohm	ohm	-	
		ASTM D2240	ASTM D257	ASTM D257	ASTM D2240	
SEBS Series	8B4	45(+/-3)	10e4~10e5	10e4~10e5	65(+/-3)	9B6
	8B5	55(+/-3)	10e4~10e5	10e4~10e5	75(+/-3)	9B7
	8B6	65(+/-3)	10e4~10e5	10e4~10e5	85(+/-3)	9B8
	8B7	75(+/-3)	10e4~10e5	10e4~10e5	95(+/-3)	9B9
	8C4	45(+/-3)	10e6~10e7	10e6~10e7	65(+/-3)	9C6
	8C5	55(+/-3)	10e6~10e7	10e6~10e7	75(+/-3)	9C7
	8C6	65(+/-3)	10e6~10e7	10e6~10e7	85(+/-3)	9C8
	8C7	75(+/-3)	10e6~10e7	10e6~10e7	95(+/-3)	9C9
	8D4	45(+/-3)	10e8~10e9	10e8~10e9	65(+/-3)	9D6
	8D5	55(+/-3)	10e8~10e9	10e8~10e9	75(+/-3)	9D7
	8D6	65(+/-3)	10e8~10e9	10e8~10e9	85(+/-3)	9D8
	8D7	75(+/-3)	10e8~10e9	10e8~10e9	95(+/-3)	9D9
	8E4	45(+/-3)	10e10~10e11	10e10~10e11	65(+/-3)	9E6
	8E5	55(+/-3)	10e10~10e11	10e10~10e11	75(+/-3)	9E7
	8E6	65(+/-3)	10e10~10e11	10e10~10e11	85(+/-3)	9E8
	8E7	75(+/-3)	10e10~10e11	10e10~10e11	95(+/-3)	9E9
						TPU Series

• Conductive PET Sheet



M08-V-000

Conductive PET sheet does not contain carbon, metal and any corrosive agents. It is very clean and can be used in Cleanroom and rewashed in either ultrasonic DI water or IPA without any degradation or contamination.

- Features
 - Not affected by humidity
 - No particle generation
 - Good durability without any degradation
- Applications
 - Thermoforming trays
 - Hard disk containers
 - Medical device packaging

Color: Clear
S/R: 10e5~10e6 ohm
Thickness: 0.5mm, 0.65mm, 0.9mm, 1.2mm
Width: 610mm, 640mm, 720mm, 1,300mm

• Conductive Sheet



M04-V-000

Material: PP, PS, PE, ABS
Color: Black
S/R: 10e4~10e6
Thickness: 0.3mm~1.2mm
Width: 450mm ~1300 mm

18 Groundings

• Wrist Strap

Worksurfaces and personnel should be grounded by the proper using of Wrist Straps, ESD Shoes, Heel Grounders, ESD Clothing, etc. Polstar Wrist Straps provide the most reliable and economical pathway of ESD built up on human body to ground. Ground Cords and Coil Cords are also the major parts of safe workstation.

Wrist Strap



Anti-Allergic Wrist Strap



Dual Wire Wrist Strap



Metal Wrist Strap



		Wrist Strap	Anti-Allergic Wrist Strap	Dual Wire Wrist Strap	Metal Wrist Strap
Snap Dia		4mm, 10mm	4mm, 10mm	4mm	4mm, 7mm, 10mm
Cord Length		6', 8', 10', 12'	6', 8', 10', 12'	6', 8', 10', 12'	6', 10', 12'
Material	Wrist band	Elastic nylon with conductive carbon yarn			Stainless steel
	Back	Stainless steel	Plastic	Stainless steel	ABS + PC
Color	Wrist band	Blue, Dark blue, Purple, etc.	Blue, Dark blue, Purple, etc.	Blue	Black, Light Blue, Dark blue
	Coil cord	Black, Blue	Black, Blue	Black	Black, Light Blue, Dark blue
		1 Mohm Resistor	1 Mohm Resistor	1 Mohm Resistor	1 Mohm Resistor

• Ground Cord

The Ground Cord is a bridge line between tabletop or floor mat and grounding point. We have 3 different diameters (4mm, 7mm, 10mm) of male and female snaps, several lengths and different ends of Ground Cords to meet customer's various needs.



M05-Z-001



M05-Z-003



M05-Z-009

Mold material: Polyurethane (PU)
Cable Dia.: 2.0mm
Cap: Yellow or Black
Color: Black
Cable break load: 120N
Stud or Socket
Plastic material(ABS+PC)

• Dual Ground Cord



M06-Z-001



M06-Z-002

Polstar Dual Common Ground Cord can connect 2 wrist straps to a grounding point. The included ring terminal is for extending cord length.

Cord parts

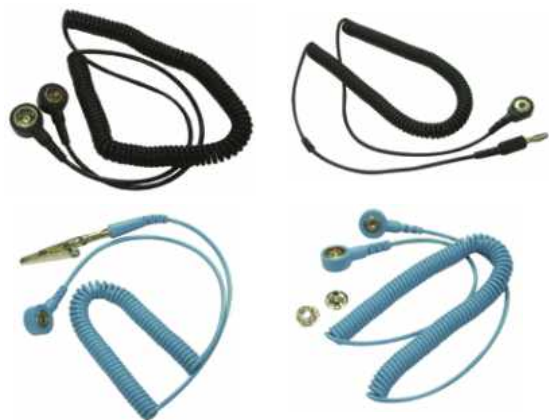
Code Length: 10ft
Conductor: 7 strand Tinsel Wire coated with durable 90A polyurethane
Mold material: Polyurethane (PU)
Cable Dia.: 2.0mm
Copper button and strong elastic copper plug
Color: Black
Cable break load: 120N
Molded plug end pull force: 8.5kgs

Snap parts

Plastic materials(ABS+PC)
Color: Black

18 Groundings

• Coil Cord



10mm Socket, Banana Jack, Length 6'
10mm Socket, Banana Jack, Length 8'
10mm Socket, Banana Jack, Length 10'
10mm Socket, Banana Jack, Length 12'

4mm Socket, Banana Jack, Length 6'
4mm Socket, Banana Jack, Length 8'
4mm Socket, Banana Jack, Length 10'
4mm Socket, Banana Jack, Length 12'

10mm Socket, 4mm socket, Length 6'
10mm Socket, 4mm socket, Length 8'
10mm Socket, 4mm socket, Length 10'
10mm Socket, 4mm socket, Length 12'

• Snap Dia & Type & Length can be adjustable.

• Dual Bench Mount



M11-Z-001

Cord length: 4.5m
Wrist strap grounding for 2 persons
Connecting with plug or snap button

• Wrist Strap Monitor



Features

- Instant warning of wrist strap failure.
- Easy and convenient to operate
- Compact and handy
- Compatible with any wrist straps with banana plug in the market.

Specifications

- Input AC 220V / 60Hz (DC 6V)
- Material: Polystyrene
- Dimension: 67mm X 60mm X 29mm
- Weight: 60gm (not including power supply adaptor)

• Wrist Strap Tester



M10-E-003

LED Display Indicator

- GOOD(Green): 800KΩ ~ 10MΩ
- HI(Yellow): 10MΩ above
- LO(Red): 800KΩ below

Specifications

- Test voltage: Regulated 9 volts, DC
- Operating Voltage: 6.5~9 volts
- Accuracy: +/- 5%
- Weight: 145g
- Dimensions: 28mm(T) x 71mm(W) x 90mm(L)

18 Groundings

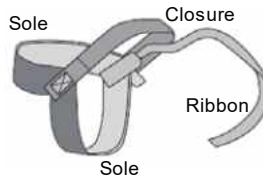
● Heel Grounder



Color: Black/White
Ribbon: 18"/30" long nylon/polyester tab with 8 conductive strands
Cross-Linked tire grade rubberstrands
1 Mohm resistor

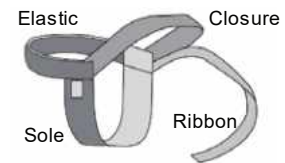
Type D

- Two soles for double life span

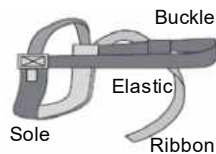


Type S

- One sole and an elastic back strap



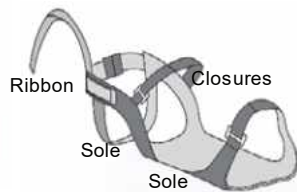
● Toe Grounder



Color: Black/White
Ribbon: 12" long nylon/polyester grounding tab with 8 conductive strands
Connecting with plug or snap button
1 Mohm resistor

Toe grounder with a snap-lock fastening system is designed for using with the variety of shoes, including high heels, cowboy boots, flats shoes, loafers and safety shoes.

● Sole Grounder



Color: Black/White
Ribbon: 12" long nylon/polyester grounding tab with 8 conductive strands
Connecting with plug or snap button
1 Mohm resistor

Sole grounder is equipped with an elastic D-ring fastening system, which provides the snug cinching of ankle strap and allows "flex" during walking. They combine the features of heel and toe grounders and are designed to use most types of shoes and boots.

Closure Styles

Hook & Loop



It provides a comfortable and secure fit

Hook & Elastic Loop



It is easy to be adjusted to fit the individual wearer

D-Ring



It allows "flex" during walking

Quick Buckle



It provides a quick release

18 Groundings

Selection Guide (Heel, Toe and Sole Grounders)

	Item Code	Closure Styles	Velcro (W)	Elastic Velcro(W)	Elastic Strap(W)	Elastic Band(W)	Size	Ribbon (L)	Sole
Heel Grounder(D)	M13-Z-001	HE		3/4"(BK)			free size	18"	double
Heel Grounder(D)	M13-Z-002	HE		3/4"(BL)			free size	18"	double
Heel Grounder(D)	M13-Z-003	HE		3/4"(GR)			free size	18"	double
Heel Grounder(D)	M13-Z-004	HL	3/4"(BK)				free size	18"	double
Heel Grounder(D)	M13-Z-005	HL	3/4"(BL)				free size	18"	double
Heel Grounder(D)	M13-Z-006	DR	3/4"(BK)				free size	18"	double
Heel Grounder(D)	M13-Z-007	DR	3/4"(BL)				free size	18"	double
Heel Grounder(D)	M13-Z-008	QB				3/4"(BK)	free size	18"	double

Heel Grounder(S)	M13-Z-500	HE		3/4"(BK)	1"(BK)		free size	18"	Single
Heel Grounder(S)	M13-Z-501	HE		3/4"(BK)	1"(RE)		free size	18"	Single
Heel Grounder(S)	M13-Z-502	HE		3/4"(BK)	1"(GR)		free size	18"	Single
Heel Grounder(S)	M13-Z-503	HE		3/4"(GR)	1"(BK)		free size	18"	Single
Heel Grounder(S)	M13-Z-504	HE		3/4"(GR)	1"(RE)		free size	18"	Single
Heel Grounder(S)	M13-Z-505	HE		3/4"(GR)	1"(GR)		free size	18"	Single
Heel Grounder(S)	M13-Z-506	HL	3/4"(BK)		1"(BK)		free size	18"	Single
Heel Grounder(S)	M13-Z-507	HL	3/4"(BK)		1"(RE)		free size	18"	Single
Heel Grounder(S)	M13-Z-508	DR	3/4"(BK)		1"(BK)		free size	18"	Single
Heel Grounder(S)	M13-Z-509	DR	3/4"(BL)		1"(BK)		free size	18"	Single
Heel Grounder(S)	M13-Z-510	QB			1"(BK)	3/4"(BK)	free size	18"	Single

Toe Grounder	M14-Z-001	QB		3/4"(BK)	3/4"(BK)		free size	12"	Single
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Sole Grounder	M15-Z-001	HE		3/4"(BK)	3/4"(BK)		S	12"	Single
Sole Grounder	M15-Z-002	HE		3/4"(BK)	3/4"(BK)		M	12"	Single
Sole Grounder	M15-Z-003	HE		3/4"(BK)	3/4"(BK)		X	12"	Single
Sole Grounder	M15-Z-004	HE		3/4"(BK)	3/4"(BK)		XL	12"	Single

* Colors - BK: Black, BL: Blue, GR: Green, RE: Red

* Closure Styles - HE: Hook & Elastic Loop, HL: Hook & Loop, DR: D-Ring, QB: Quick Buckle

Examples)

* M13-Z-004: Heel Grounder Type D, Closure type: Hook & Loop, Black Velcro, Double Soles

* M13-Z-504: Heel Grounder Type S, Closure type: Hook & Elastic Loop, Black Elastic Velcro, Red Elastic Strap, Single Sole

* M14-Z-001: Toe Grounder, Closure type: Quick Buckle, Black Elastic Velcro, Black Elastic Strap, Single Sole

* M15-Z-003: Sole Grounder, Closure type: Hook & Elastic Loop, Black Elastic Velcro, Black Elastic Strap, Single Sole, Large size

19 Disposable

• Face Mask

Clean Face Mask



M01-D-001

3 ply non-woven meltblown PP filter
Size: 90mm x 180mm
Ear Loop: 190 mm
Bacteria Filtration Efficiency (BFE): Min. 99%
Pressure Differential (Delta-P): Max. 1.6mm/Aq.
Particles (>0.3 microns): Less than 50 ea (Dry Flex test)
Packing: 50 pcs/bag

CleanRoom Face Mask



M01-D-009

Basic Information

- Size: 90mm x 180mm, 90mm x 210mm, 90mm x 230mm, 3 layers
- Packing: 50pcs/Bag, 30Bags/Box

Materials

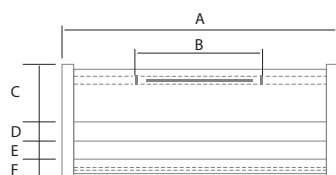
- Out layer: HDPE Film(1st filtration)
- Middle layer: Polypropylene Filter(2nd filtration)
- In layer: PET/PP mixed non-woven
- Ear Band: TPU

Product Specifications

(90mm x 230mm)

	A	B	C	D	E	F	Tolerance
Length(mm)	230	95	35	17	15	23	+/- 5%

	Measure	Standard	C
APC	ea/g, 0.1um, 1CFM	Max. 120	
Dimensional Stability	%	Max.5	



Features

- Adopting unique designs
 - Using HDPE film in out layer
 - Using TPU ear bands
 - Making bigger size(9cm x 23cm, 9cm x 21cm)
 - Attaching ear bands onto the front side of the Mask
- Using best fit materials required by each part to achieve comfortability, good air permeability and filtration.
- All materials used have been passed a skin trouble test with the mark of "Negligible".
- By using Polypropylene filter, which has high efficient filtering performance with good air permeability, as a middle layer, our CleanRoom Face Mask provides excellent comfortability to users.

Test Date

APC Test

Test unit	Specifcatons	Result			
		20 - RPM	30 - RPM	40 - RPM	50 - RPM
Cleanliness (/5EA)	Less than 825.0	410.7	643.4	648.9	639.1
Cleanliness (/1EA)	Less than 165.0	82.1	128.7	129.8	127.8
Cleanliness (/g)	Less than 50.0	24.6	40.9	31.9	34.1

Ion Test

Test unit	Results (mg/L)	Test Methods
Na	0	ICP Test
Ca	0	ICP Test
Ci	0	IC Test

Skin Trouble Test

Test unit	Results (mg/L)	Test Methods
Mask body	Negligible	ISO 10993-10 Skin irritation test
TPU Band	Negligible	ISO 10993-10 Skin irritation test

19 Disposable

Cleanroom Active Carbon Face Mask



4 ply non-woven meltblown PP and active carbon filter for smell filtering
Size: 90mm x 180mm
Ear Loop: 190mm
Bacteria Filtration Efficiency (BFE): Min. 99%
Pressure Differential (Delta-P): Max. 1.6mm/Aq.
Particles (>0.3 microns): Less than 50 ea (Dry Flex test)
Packing: 50 pcs/bag

M07-D-001

Cone Type Respirator

Our Cone Type Respirators are specially designed to protect workers working in various industrial fields. There are several different grades in our range. Basically, all grades of our Respirators consist of 4 layer constructions, such as surface non-woven, outer filter, electrostatic charged filter and inner filter with white and grey colors, but some types are reinforced with special layer, material, treatment, attachment, etc. for maximum efficiency in certain areas or circumstances.

Item code Descriptions	Grade	Head String Type	Face Cushion	Exhalation Valve	Head String Hook	Multi-Purpose Filter	High Effective Active Carton Fabric
M06-D-006 (C250)	Dust, Mist	Fixed type					
M06-D-007 (C270V)	Dust, Mist	Fixed type		√			
M06-D-008 (C280V)	Dust, Mist	Band Hook Type	√	√	√		
M06-D-009 (C350)	Dust, Mist, Smell	Fixed type					√
M06-D-0010 (C450V)	Dust, Mist, Fume	Fixed type		√		√	

CE



M06-D-006 (C250)

Features

- CE Certified
- Applied the two step process to protect filter, better efficiency, low resistance and long lifetime
- Changing a material, remove fuzzy and smell, light weight and good elasticity
- No deformation of mask form/Better wearing, comfort and airtightness

Applications

- Dust, Mist



Packing information
240 pcs/case(20pcs/box, 12 boxes/case)

19 Disposable

CE



M06-D-007 (C270V)

Features

- CE Certified
- Equipped with a new exhalation valve one-body type valve, no break, no leakage
- Low inhalation resistance, Light weight

Applications

- Dust, Mist



Packing information
240 pcs/case(10pcs/box, 24 boxes/case)

CE



M06-D-008 (C280V)

Features

- CE Certified
- Face contact seal: Equipped
- Exhalation valve: Equipped
- The best performance and functionality as P1 class product (Efficient 96~99%, Resistance 80~100pa/95L)

Applications

- Dust, Mist



Packing information
240 pcs/case(10pcs/box, 24 boxes/case)

CE



M06-D-009 (C350)

Features

- Apply the high efficient fabric to all 300 series -> Good for deodorization
- Excellent resistance of in-exhalation
- Carbon power never drop

Applications

- Dust, Mist, Smell



Packing information
240 pcs/case(20pcs/box, 12 boxes/case)

CE



M06-D-010 (C450V)

Features

- CE Certified.
- Equipped with a exhalation valve
- Apply the super electrostatic filter on 400 series mask, Excellent resistance of in-exhalation & efficiency
- New exhalation valve makes you to breath easily, light weight and give you a clear view
- No leakage as all-in-one attachment method
- Structure: 3 layers(Surface felt, Super electrostatic filter, Inner filter)

Applications

- Dust, Mist, Fume



Packing information
240 pcs/case(10pcs/box, 24 boxes/case)

19 Disposable

Fitting Instructions

Fixed Type



Band Hook Type A



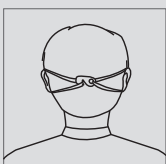
1. Cup the mask in your hand with the nose clip at your finger tips, allowing the head string to hang freely below your hand position the mask under your chin with the nose clip

2. Pull the top string over your head resting it high at the top back of your head.

3. Pull the bottom string over your head and position it around the neck below the ears

4. Place your fingertips from both hands at the top of the nose clip. Using two hands, mold the nose area to the shape of your nose by pushing inward while moving your fingertips down both slides of the nose clip. Check the fit, place both hands completely over the mask and exhale. If air leaks around mask edges, readjust the nose clip and mask edges to be fit face properly.

Band Hook Type B



Hook the left side string and right side string, and strain the strings to be fitted

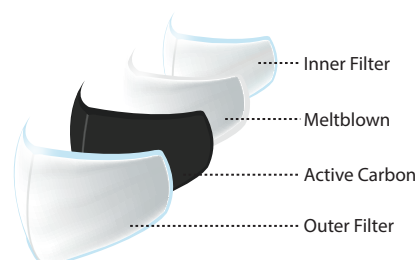
Dust Mask



M12-D-001



4 layer Replaceable Filter



Features

- Reusable after cleaning
Using double ressell mesh polyester material that passed 200 cycle durability test
- Adopt funtional filter
4 layer replaceable superlative filter(PM 2.5um, 97% efficiency)
- Super wearability
3D mapped fit design
Double wire support
Optimal air entry by using high-quality mesh
Extra helping pad for nose clips
Latex free spandex ear loop
- UV protection
KS certified material blocks over 90% of UV rays



Size (Color: Black, Wihite)

Size	A	B
L	220mm	150mm
M	200mm	140mm
S	180mm	120mm

19 Disposable

• Finger Cots

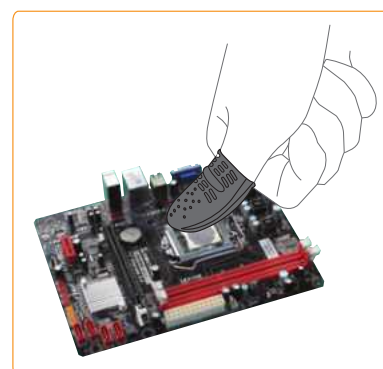
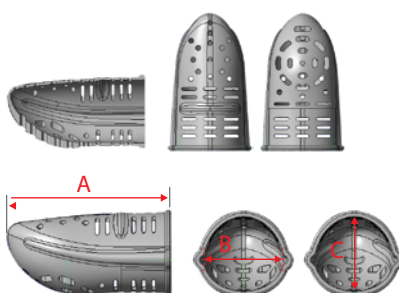


Item Code	M08-D-002	M08-D-003	M08-D-009
Material	Natural Rubber Latex DRC 60%(Biodegradable)		100% Natural Rubber Latex
Type	Rolled type, Cut type(option)		Rolled type
Color	White	Yellow, Pink(option)	Black
Thickness	0.09mm+/- 0.03mm		0.10mm+/- 0.02mm
Length	70mm +/- 2mm (rolled type), 60mm +/- 2mm (cut type)		65mm +/- 2mm
Width	S(24mm +/- 2mm), M(28mm +/- 2mm), L(30mm +/- 2mm)		S,M,L
Features	Pre-powdered(food grade)		Powder free(Chlorinated)
	Smooth surface, Textured at tip(option) Free Silicone oil, amides and DOP		Smooth surface, Textured at tip(option)
Elongation at break	>700 %		
Tensile strength	> 24 Mpa		> 20 Mpa
Static charge	< 50V		-
Tribo-Electric charge	< 150V		-
Surface resistance	10e8~10e11 ohm		10e6~10e8 ohm
Decay time	< 3sec. (1000v to 100v, at 60 +/- 5% RH)		-
Storage conditions	Cool and dry place, Avoid direct sunlight and copper material		
Packing information	1000pcs/bag, 30bags/carton		1440pcs/bag, 20bags/carton

• ESD Finger Cots



M08-D-004



Color: Black
Size: PH-40~PH-48
Material: SEBS(Styrene Ethylene Butadiene Styrene)
Surface resistance: 10e7~10e10 ohm

Size	A(mm)	B(mm)	C(mm)	Weight(g)
PH-40	33.35	15.5	15.5	1.46
PH-41	35.73	17	16.5	1.7
PH-42	37.50	18	18	1.99
PH-43	39.30	18.5	19	2.3
PH-44	41.73	19.5	20	2.64
PH-45	42.58	21	20.5	2.82
PH-46	43.58	20	21	2.98
PH-47	44.60	21.5	21.5	3.09
PH-48	45.70	22	22	3.36

Features

- Reusable
- Various sizes(9 levels)
- Relieve Finger pain from repeated pushing work
- Keep finger in comfortable conditions by letting external air in and humidity on finger out

Properties	Result	Unit	Test Method
Tensile Strength	7.14~10.5	Mpa	ASTM D4 12-06ea2(Die C)
Durometer(A-type)	32~52		ASTM D2240-05
Ultimate Elongation	700~800	%	ASTM D412-06ea2(Die C)
Surface Resistance	10e7~10e10	ohm	KS M 30'15 : 2003
Voltage Resistance (KV, 1min)	No Defects		KS M 30'15 : 2003

19 Disposable

• Disposable Shoe Cover



M02-D-005

Material: Non-woven fabric
Size: 40 x 15cm
Color: Blue
Weight: 35g
Packing: 50pairs/bag, 20bags/ctn



M02-D-006



Anti-Slip

Material: Non-woven fabric
Size: 40 x 16cm
Color: Blue
Weight: 40g
Packing: 50pairs/bag, 20bags/ctn

• Non-woven Hair Cap



M09-D-002 (14g)
M09-D-003 (20g)
M09-D-004 (32g)

Material: Non-woven fabric
Size: 23inches
Color: White
Weight: 14, 20, 32g
Packing: 100pcs/bag, 10bags/ctn

20 PPE

• Heat Protection Series



• Heat Resistant Gear

Kevlar + Carbon Series

Material: Kevlar + Carbon fiber

Features

- Heat resistance to 400°C
- Helps welding operation with excellent wearability and flexibility
- Excellent cut resistance
- Widely used for welding purpose in replacement of leather protective equipment
- Can be custom-made to suit customer's requirements



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PPE

Heracron + Nomex Series



Material: Aramid / Heracron + Nomex

Features

- Heat resistance to 200°C
- Excellent heat resistance and tensile strength
- Can be custom-made to suit customer's requirement



• Flash Protection Guard



Material: Aluminized aramid heat resistant fabric

Features

- Withstand radiant temperatures up to 800°C
- Superior protection from extreme temperature
- KCs(Korea Certificate Safety)
- Can be custom-made to suit customer's requirements



20 PPE

• Safety Helmets



M02-Q-001



Weight: 365g
Material: ABS
Class: ABE

Features

- Comfortable & light Weight
- RBS* provides excellent impact absorption
- Adjustable with 6 point suspension system
- Auto-release chin strap
- Low nape head band with ratchet suspension
- Slot for ear plugs and face protector



M02-Q-003



Weight: 405g
Material: ABS
Class: ABE

Features

- Recommend for supervisor level
- RBS provides excellent impact absorption
- Adjustable with 6 point suspension system
- Auto-release chin strap
- Low nape head band with ratchet suspension



M02-Q-004



Weight: 390g
Material: ABS
Class: ABE

Features

- Good upper peripheral vision
- RBS provides excellent impact absorption
- Adjustable with 6 point suspension system
- Auto-release chin strap
- Low nape head band with ratchet suspension

• Cleanroom Safety Helmet



M07-Q-001



• Bump Cap



M03-Q-001



Material: ABS/Polypropylene

Features

- The helmet and the bump cap are developed to meet needs for light work and cleanroom environment.

* RBS : Rail Brake Suspension System

Safe Helmet Class

- A Grades : prevent the falling object
- AB Grades : Prevent the falling object, falling
- AE Grades : Prevent the falling object, electric shock under 7000V
- ABE Grades : Prevent the falling object, falling, electric shock

20 PPE

• Safety Glasses



Lense: Clear Lenses
Material: Frame-PC / Lense-PC
Weight: 34.4g
Size(mm): 154.8(W) x 158(H) x 55.5(D)

Features

- Excellent impact resistance of PC lenses and frame
- Block 99.9% of UV rays
- Wide view by adopting big lenses
- Good wearability

• Safety Goggles



Lense: Clear Lenses
Material: Frame-PVC / Lense-Acetate
Weight: 66.8g
Size(mm): 68(L) x 149(H) x 0.8(T)

Features

- 4 ventilation holes
- Excellent antifog property
- Light weight frame
- Good wearability
- Easy replacement of the lenses (sold separately)
- Good resistance of heat and chemicals
- No particle is stuck on the lenses by anti-static function

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PPE

• Cleanroom Safety Goggles



Lense: Clear Lenses
Material: Frame-Silicon/ Lense-PC
Weight: 91.2g

Features

- Can be used in Cleanroom
- Autoclavable
- Excellent antifog property
- One-touch soft and wide detachable band
- Good wearability
- Good resistance of heat and chemicals
- Anti-static function, no particles and no allergy



Materials
Frame: Santoprene™ thermoplastic rubber(gray)
Lense: Polycarbonate(clear)
Head band: Silicone(clear)

Application: Aseptic processing (sterile environments) or ISO 5
Size(mm): 19 x 9 x 8 cm (l x b x h)
Weight: 108g

Features

- Soft frame material
- Innovative panorama lens for superb all-around vision
- Rotatable hinges allow for broad adjustability
- Fully autoclavable at 121° / 134° C (reusable)
- Robust silicon headband (lint and latex free)
- Special ventilation concept prevents fogging of the lens
- Complies with GMP, ISO, VDA and FDA regulations

CE



M01-Q-003

Materials

Frame: Santoprene™ thermoplastic rubber(gray)
Lense: Polycarbonate(clear)
Head band: Silicone(clear)

Application: Aseptic processing (sterile environments) or ISO 5
Size(mm): 18 x 8 x 8 cm (l x b x h)
Weight: 95g

Features

- Soft frame material
- Extra wide design enables superior vision
- Specially suitable to be worn over prescription glasses
- Fully autoclavable at 121° / 134° C (reusable)
- Robust silicone headband (lint and latex free)
- Special ventilation concept prevents fogging of the lens
- Complies with GMP, ISO, VDA and FDA regulations

CE



M01-Q-004

Materials

Frame: PVC(clear)
Lense: Polycarbonate(clear)
Head band: Silicone(clear)

Application: Aseptic processing (sterile environments) or ISO 5
Size(mm): 17 x 7 x 8 cm (l x b x h)
Weight: 82g

Features

- Soft frame material
- Anti-fog coating
- Indirect ventilation system prevents particles shedding
- Optimized shape and nose piece for comfortable fit
- EtO (Ethylene Oxide) sterilized to 10-6
- Double, cleanroom-compatible packing for aseptic donning
- Complies with GMP, ISO, VDA and FDA regulations

• Painting Goggles

CE

Ks



M15-Q-001

Components:

Goggle(PC+ABS, Sky-blue)
Lens(PC, Clear), Anti-fog, 1mmT x 71mm x 165mm
Film(PET, Clear), Anti-static, 50um x 70mm x 3.25m

Features

- Personal eye-protection with windable clear film®
- Protection against Droplets and splashes of Liquids
- Glasses Wearable
- Compatible with Mask

Push the film winding lever



Polluted goggle after painting



On replacing film



Clear goggle after film winding

20 PPE

• Non-slip Slippers



Upper: EVA
Sole: Rubber
Color: Pink, Grey
Size (Pink – 240, 250mm, Grey – 250, 260, 270, 280mm)
Non-slip sole(*COF: 0.48)

• ESD Non-slip Sandals



Upper: EVA + ABS Toe Cap
Sole: Rubber
Color: White, Black
Size: 230mm~300mm(10mm interval)

Features

- Non-slip sole(COF: 0.44)
- Super light weight(255g/piece, 260mm)
- ESD properties: $0.1\text{Mohm} < R < 10\text{Mohms}$
- Laboratory, Hospital, Kitchen, Semiconductor,
- Good chemical resistance
- Hard toe cap
- 3 ventilation holes



Anti-Static



Non-Slip
(Oil&Water)



Breatheable



Toe Hard-cap

• Non-slip Rubber Shoes



Upper: EVA
Sole: Rubber
Color: Black
Size: 250mm~300mm(10mm interval)

Features

- Non-slip sole(COF: 0.44)
- Super light weight(218g/piece, 260mm)
- Good chemical resistance
- 4" heel cup



Non-Slip
(Oil&Water)



Cook&Kitchen

* COF : Coefficient of Friction

• Insulative Safety Shoes

Upper: Natural Cowhide, Steel Toe Cap
Sole: Phylon & Rubber, Kevlar+Aramid
Color: Black
Sizes: 230~300mm(5mm interval)

Features

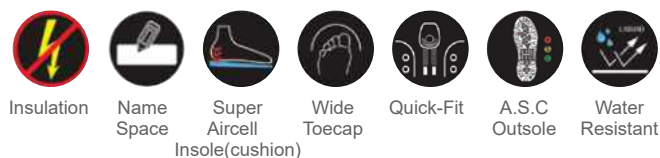
- Certificate No: 18-AV2CR-0311
- Insulation up to 14,000V
- Anti-Puncture middle soles
- Air Mesh Inner soles
- Dial lace adjuster



M13-Q-001



M13-Q-002



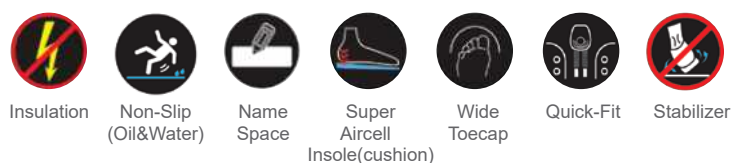
Upper: Natural Cowhide, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0172
- Insulation up to 14,000V
- Sandwich Mesh Inner cover
- ASC special outsole
- Reinforced heel parts
- Anti-Puncture middle soles
- Lace adjuster



M13-Q-003



Upper: Natural Cowhide, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0147
- Insulation up to 14,000V
- Sandwich Mesh Inner cover
- ASC special outsole
- Reinforced heel parts
- Anti-Puncture middle soles
- Ankle stabilizer
- Lace adjuster

20 PPE



M13-Q-004



Insulation



Non-Slip
(Oil&Water)



Wide
Toecap



Super
Aircell
Insole(cushion)



Dial Lock



Stabilizer

Upper: Synthetic & Cordura Mesh
Sole: Phylon & Rubber, Kevlar+Aramid
Color: Grey
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0146
- Insulation up to 14,000V
- Non-slip sole(COF: 0.25)
- Cordura double mesh
- Nanotex waterproof fabric
- Anti-Puncture middle soles
- Ankle stabilizer
- Dial lace adjuster

Upper: Artificiality Nubuck & Cordura Mesh, Steel Toe Cap
Sole: Phylon & Rubber
Color: Grey
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0347
- Insulation up to 14,000V
- Coefficient of Friction(sole): 0.25
- Cordura double mesh
- Nanotex waterproof fabric
- Anti-Puncture middle soles
- Ankle stabilizer
- Dial lace adjuster



M13-Q-005



Insulation



Non-Slip
(Oil&Water)



Wide
Toecap



Super
Aircell
Insole(cushion)



Dial Lock



Stabilizer

• ESD Non-slip Safety Shoes



M14-Q-001



Anti-Static



Non-Slip
(Oil&Water)



Name
Space



Ventilation
(In&Out)



Super
Anti-static



3M
Reflection



Wide
Toecap

Upper: Synthetic & Sandwich Mesh, Steel Toe Cap
Sole: Phylon & Rubber
Color: Grey
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0203
- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Lace adjuster

Upper: Synthetic material, ABS Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

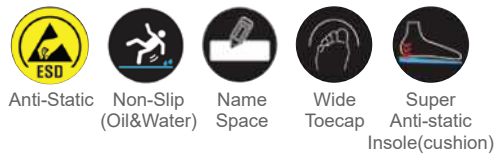
- Certificate No: 18-AV2CR-0247
- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Lace adjuster
- Air mesh upper sole



M14-Q-002



M14-Q-003



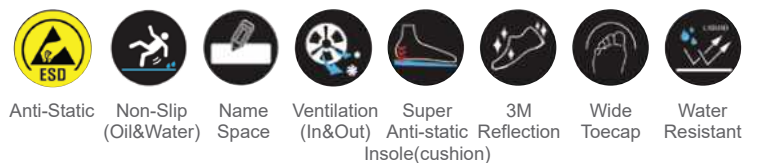
Upper: Synthetic & Sandwich Mesh, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Dual Velcro



M14-Q-004



Upper: Natural Cowhide & Synthetic material, Steel Toe Cap
Sole: Phylon & Rubber
Color: Black
Sizes: 230~300mm(5mm interval)

Features

- Certificate No: 18-AV2CR-0286
- ESD Properties: $0.1\text{Mohm} < R < 100\text{Mohm}$
- Non-slip sole(COF: 0.25)
- Anti-Puncture middle soles
- Dual Velcro

20 PPE

• Safety Rubber Boots Series Chemical Resistant Safety Boots



M17-A-001

- Resistant to 15 chemical materials
- Material: Natural rubber + Hypalon
- Steel toe cap
- S/R 10e6 - 10e8 ohm(ESD Type)



M17-A-002

ESD Type

Chemical	CAS Registry Number
Acetone	67-64-1
Dichloromethane	75-09-2
Toluene	108-88-3
Diethylamine	109-98-7
Tetrahydrofuran	109-99-9
Ethyl Acetate	141-78-6
N-Hexane	110-54-3
Sodium Hydroxide 40%	1310-73-2
Sulfuric Acid 96%	7664-93-9
Nitric Acid (65±3)%	7697-37-2
Acetic Acid (99±1)%	64-19-7
Ammonia Solution (25±1)%	1336-21-6
Hydrogen Peroxide (30±)%	124-43-6
Isopropanol	67-60-0
Sodium Hypochlorite (13±)%	7681-52-9

Acid Resistant Safety Boots



M18-A-001

Chemical
Acetone
Acetonitrile
Diethylamine
Ethyl Acetate
N-Hexane
Methanol
Toluene
Dimethylformamide
Phosphoric Acid
Sulfuric Acid 80%
Hydrochloric Acid 37%
Nitric Acid 60%

- Inorganic Acid resistance
- Material: Natural rubber + Hypalon
- Steel toe cap

Alkali Resistant Safety Boots



M19-A-001

Chemical
Sodium Hydroxide Solution 20%
Ammonia Solution 28%

- Strong alkali chemical resistance
- Material: Natural rubber + SBR
- Steel toe cap

Oil resistant Safety Boots



M20-A-001

- Material: Natural rubber + NBR
- Steel toe cap

General Safety Boots



M21-A-001

- Material: Natural rubber
- Steel toe cap

• Cold Resistant Gloves

Terry Latex Coating Thermal Gloves



M41-G-001

Features

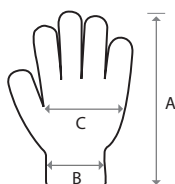
- Seamless cotton terry yarn with a brushed terry ensures excellent warmth and comfort.
- Crinkled latex palm coating provides extra grip and durability as well as outstanding abrasion resistance.

Material

Liner- Cotton mixed polyester & acrylic

Coating- Latex (Condensed crinkled grey latex palm coating)

Packing: 12prs/bag, 6bags/ctn



(cm,g)		
Size	M	L
A	25	27
B	5	7
C	10	10.5
Weight	115	117

Fleece Lined Leather Thermal Gloves



M41-G-010

Features

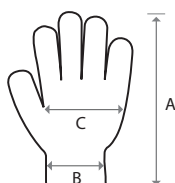
- Fleece inner liner offers warmth and coziness.
- Keep hands warm while allowing maximum dexterity to operate tools or machinery.
- Made of the finest grain leather, which is known for its breathability, softness and comfort.
- Naturally resistant to moisture like oil and water.

Material

Grain Cow Leather

Inner liner- Polar Fleece

Packing: 10prs/bag, 10bags/ctn



(cm,g)	
Size	Free
A	25
B	6
C	11
Weight	110

Explained: The signs in the EN pictogram



EN 388
1234BP

Impact Protection (no P or P)

Cut Resistance (A-F)

Puncture Resistance (1-4)

Tearing Resistance (1-4)

Cut Resistance, Coup Test (1-5)

Abrasion Resistance (1-4)



EN 407
123412

Large Quantities of Molten Metal (0-4)

Small Splashes of Molten Metal (0-4)

Radiant Heat (0-4)

Convective Heat (0-4)

Contact Heat (0-4)

Fire Properties of the Material (0-4)



EN 511
121

Protection Against Water Penetration (0 or 1)

Protection Against Contact Cold (0-4)

Protection Against Convective Cold (0-4)

Reference : <https://guidegloves.com/guidance/standards/>

20 PPE

• Elbow Protector



M16-Q-001

• Knee Protector



M17-Q-001

• Shin Protector



M18-Q-001

• Shoulder Protector



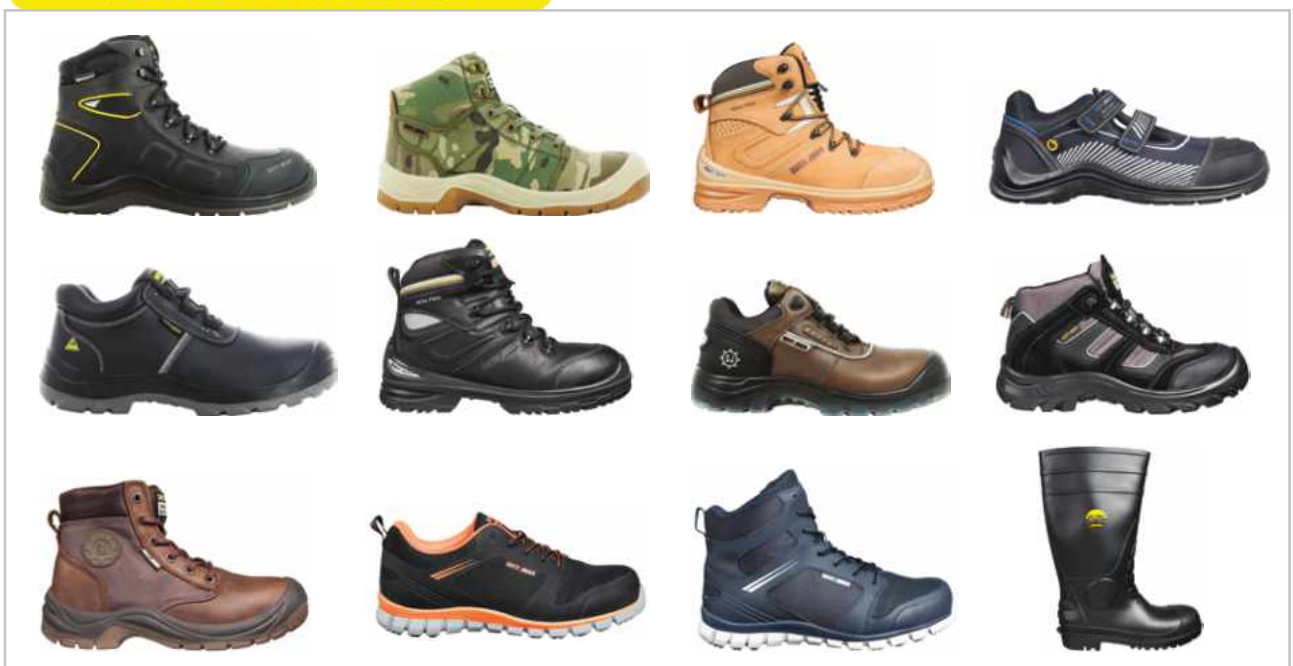
M19-Q-001

Material: Cowhide, Urethane
Size: One size fits all

■ OFFICIAL DISTRIBUTORS OF



SAFETY JOGGER **SAFETY SHOES**





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