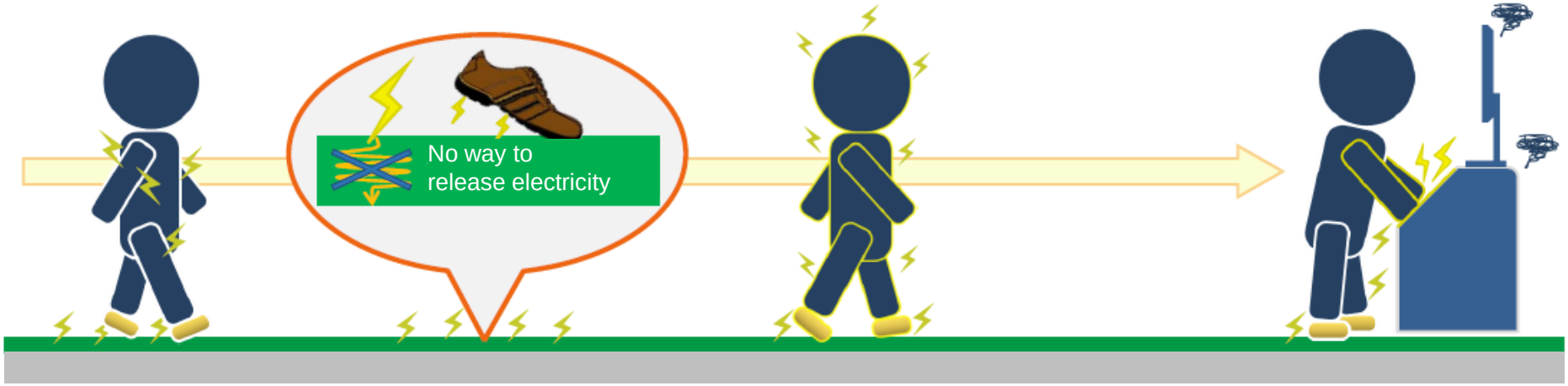
Characteristics of Conductive Floor/Functional Floor

Mechanism of static electricity generation

PVC is a near-insulator, thus static electricity generated during walking is not discharged into the subfloor or the air, but accumulates on the human body. This is the cause of static electricity trouble.



Static electricity is generated by abrasion of shoes and clothing when walking.

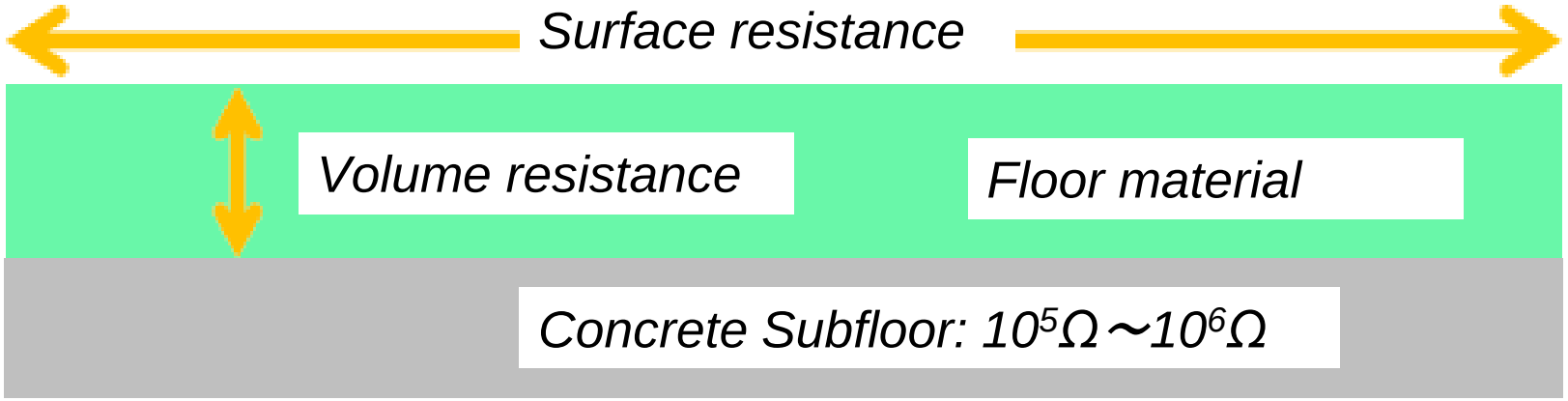
Static electricity flows through the human body and human body is charged.

Discharged toward electronic equipment, causing mechanical trouble

Solution

Antistatic flooring has the function of releasing electricity from the floor to the subfloor, etc. and reducing the charge on the human body.

General PVC floor material's resistance value assumed to be around $10^{10}\Omega$ with which static electricity hardly flows, but if the resistance value is lowered to around $10^{9}\Omega$, it can flow toward the building.



Surface resistance:
→Resistance to electric current flowing across the surface of the flooring material
Volume resistance:
→Resistance to electric current flowing in the direction of the thickness of the flooring material

→Electricity flows toward where the resistance value is lower.

Our Classification of antistatic floor

Antistatic Floor

Flooring material installed on concrete subfloor
-static electricity is released to buildings

Conductive

Static Dissipative

Our prodcuct

CONDUCTIVE FLOOR DS / LE
ANTISTAR SHEET, etc.

Flooring material for loose lay installation
-static electricity is released to air

Antistatic

High Antistatic

Our prodcuct

Carpet iles
Loose lay vinily floor tiles, etc.

Electrostatic Conductive Floor

Function.1:Suppress generation of static electricity
Function.2:The generated static electricity can be released to **ground through ground wire.**

Resistance value of floor material:
:around $10^4\Omega$ to $10^6\Omega$

Our prodcuct

CONDUCTIVE FLOOR DS / LE

Static Dissipative Floor

Function.1:Suppress generation of static electricity
Function.2:The generated static electricity can be released to the **building.**

Resistance value of floor material
:around $10^7\Omega$ to $10^9\Omega$

Our prodcuct

ANTISTAR SHEET, etc.

Antistatic Floor

Function.1:Suppress generation of static electricity
Function.2:The generated static electricity can be released **dissipating to air.**

Resistance value to subfloor:
not required
Human body electric charge potential@kV

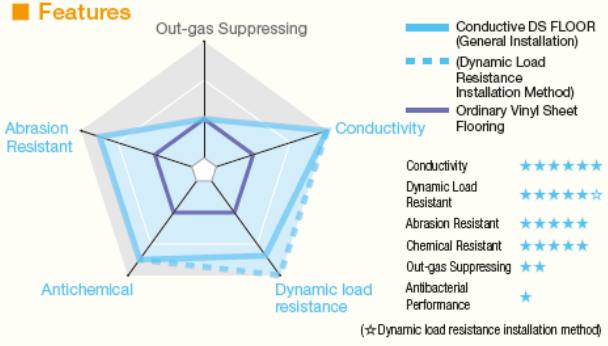
Our Internal subclassification
(Carpet Tile. Loose lay tile)

Product Overview: our line-up of conductive/antistatic sheet

Conductive Vinyl Sheet Flooring

Conductive DS FLOOR

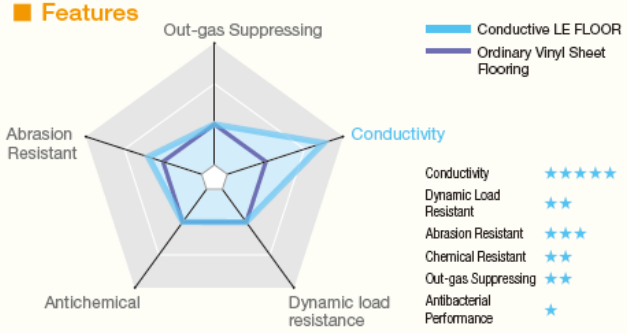
■ Features



Conductive Vinyl Sheet Flooring

Conductive LE FLOOR

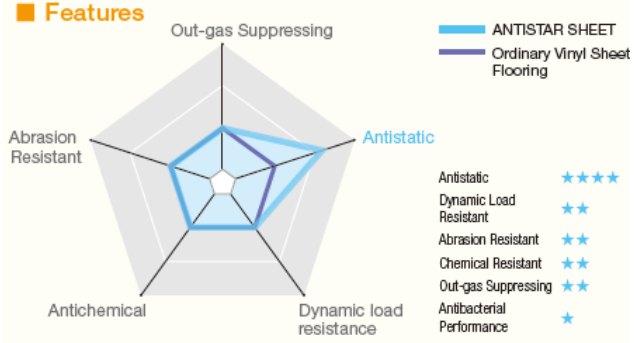
■ Features



Antistatic Vinyl Sheet Flooring

ANTISTAR SHEET

■ Features



High

Performance/ Cost

Low

Antistatic property

■Conductivity, Antistatic

*Note: Unless otherwise specified, all values in technical documents are measured values.not guaranteed values.

	Unit	Conductive DS FLOOR	Conductive LE FLOOR	ANTISTAR SHEET	M FLOOR	ANTIBACTERIAL M FLOOR	M FLOOR OG	Anti-chemical Vinyl Sheet LAB PLUS	Anti-chemical Vinyl Sheet LAB	Ordinary vinyl sheet flooring
Category		Conductive Flooring	Conductive Flooring	Antistatic flooring	Antistatic flooring	Antistatic flooring	Antistatic flooring	Antistatic flooring	Antistatic flooring	Ordinary floor
Surface Resistance *1	Ω	7.0×10^{4}	6.6×10^{6}	9.3×10^{7}	7.2×10^{8}	7.2×10^{8}	5.4×10^{8}	1.3×10^{9}	1.3×10^{9}	10^{10}~10^{11}
Volume Resistance *1	Ω	4.3×10^{4}	7.8×10^{6}	1.8×10^{7}	1.9×10^{8}	1.9×10^{8}	1.4×10^{8}	3.1×10^{8}	3.1×10^{8}	10^{10}~10^{11}
Surface Resistance *1 In-House Standard Value	Ω	2.5×10^{4} or more 1.0×10^{8} or less *4*5	1.0×10^{7} or less	5.0×10^{8} or less	1.0×10^{9} or less	1.0×10^{9} or less	1.0×10^{9} or less	5.0×10^{9} or less	5.0×10^{9} or less	–
Volume Resistance *1 In-House Standard Value	Ω	2.5×10^{4} or more*4	1.0×10^{7} or less	1.0×10^{8} or less	5.0×10^{8} or less	5.0×10^{8} or less	5.0×10^{8} or less	2.5×10^{9} or less	2.5×10^{9} or less	–
Electric charge potential *2	V	3	9	10	10	10	10	40	40	500~1000
U value		6.2	6.0	4.5	3.5	3.5	3.5	3.1	3.1	1.0
Grade		I	I	II	II	II	II	III	III	IV
Volume electricity resistance *3	Ω	8.7×10^{4}	4.4×10^{6}	6.6×10^{7}	5.6×10^{8}	5.6×10^{8}	5.6×10^{8}	1.7×10^{9}	1.7×10^{9}	1.3×10^{10}

*1 JIS K 6911 compliant *2 Using static electricity free shoes *5 Specified value is maximum value of 5.0×10^{6} Ω or more/minimum value of 1.0×10^{4} Ω or more, as well as average value of 2.5×10^{4} Ω or more 2×10^{6} Ω or less

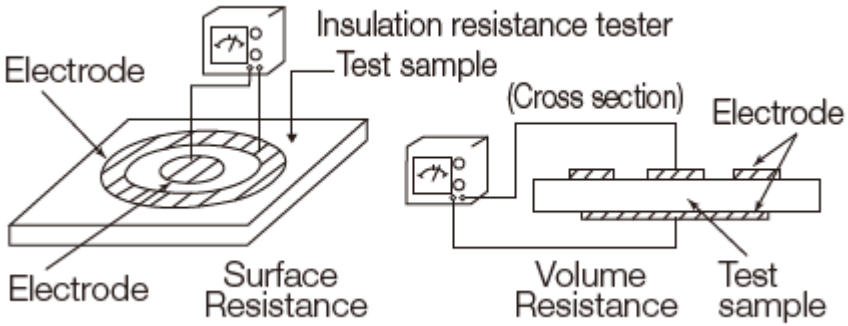
*3 JIS A 1454 compliant *4 NFPA 99 compliant

Both DS Floor and LE Floor show excellent conductive performance.

Antistatic property：How the test is done

Test Method for measuring the resistance value

Resistance when applying 500 V for one minute was measured using an insulation resistance tester.
Measurement conditions: 20 ºC, 65% RH

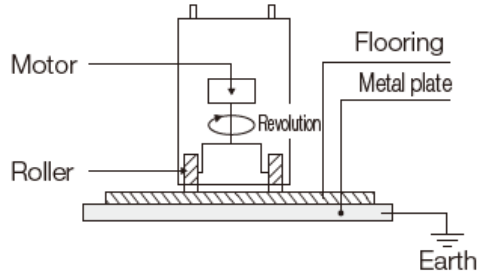


Test Method for measuring U value

JIS A 1455.An index reflecting the maximum charging potential and half-value period.The higher this number, the greater the antistatic performance.

U value	Grade	Interpretation
5.2 or more	I	Flooring material/floors with extremely high static resistance
3.2 or more, less than 5.2	II	Flooring material/floors with relatively high static resistance
1.2 or more, less than 3.2	III	Flooring material/floors with static resistance
Less than 1.2	IV	Flooring material/floors without static resistance

Flooring was installed atop a grounded metal plate and maximum charging potential and half-value period were measured when applying 50 V, as shown in the illustration.
Measurement conditions: 23 ºC, 25%
Compliant with JIS A 1455 methods for measurement and evaluation of static electricity resistance of flooring materials/floors



Dynamic Load Resistance

■Castor wheel pressure resistance testing (JIS A 1454) A-2 method (2000N load)

	Thickness (mm)	Time until abnormality appears 0 1h 2h 3h 4h 5h 6h 7h 8h 9h	Condition
M FLOOR	2.0		Swelling
ANTIBACTERIAL M FLOOR	2.0		Swelling
Conductive DS FLOOR (Dynamic Load Resistance Installation Method)	2.0		Swelling
M FLOOR OG	2.0		Swelling
Conductive DS FLOOR (General Installation)	2.0		Swelling
Conductive LE FLOOR	2.0		Swelling
ANTISTAR SHEET	2.0		Swelling
Anti-chemical Vinyl Sheet LAB PLUS	2.0		Swelling
Anti-chemical Vinyl Sheet LAB	2.0		Swelling
Ordinary vinyl sheet flooring	2.0		Swelling

■Test overview

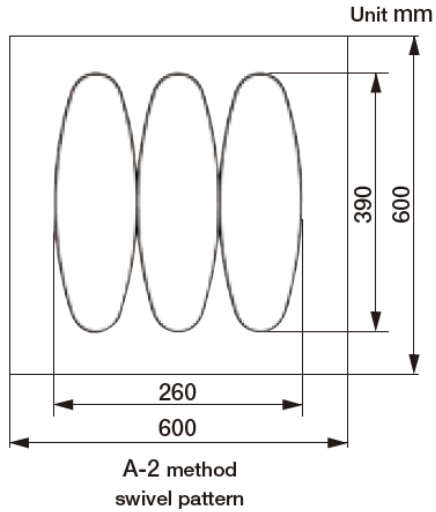
Compliant with JIS A 1454 polymer system flooring test method castor wheel pressure resistance testing

■Test method

Castor wheel pressure resistance testing A method, A-2 method (2000N load).Additionally, for A method, a swivel pattern was used as shown in the illustration.

A-2 method

Weight: 2000 ±10 N; perpendicular stroke: 390 ±2 mm at a speed of 7 ±0.4 times/minute; parallel stroke: 260 ±2 mm at a speed of 1.72 ±0.1 times/minute; perpendicular and parallel speed ratio: 4.07 ±0.03.



If the dynamic road resistance is the most important feature,
M floor or Conductive DS Floor might be an option.

TAJIMA

Dynamic Load Resistance

■Tips for installing in buildings/areas where dynamic load resistance is required

Dynamic load resistance factors: Load, flooring materials, subfloor, installation

Load: Load placed on flooring and subfloor will differ depending on weight, width of castor wheels and flooring material.The harder the castor wheels and the smaller the point of contact with floor, the more extreme the force will become.

Flooring materials: Materials that are more resistant to damage (homogeneous construction) are better.

Subfloor: Subfloors should be smooth and dry with sufficient surface strength.If subfloors are concrete, Dynamic load resistant floor Primer can be applied to the entire surface to strengthen surface and provide a good finish.

*For more details, enquire with any Tajima branch or distributor.

Installation: Epoxy resin adhesive should be used.

*Note: Unless otherwise specified, all values in technical documents are measured values.not guaranteed values.

■Example loads of carts/equipment: M FLOOR series / Conductive DS FLOOR (Dynamic Load Resistance Installation Method)

Durability can differ depending on the type of cart, load involved, frequency of use, etc. Possible estimates for cart and equipment loads are provided below.*Be aware that rubber wheels may leave black rubber marks on floor.*Material, diameter and width of wheels should also be taken into consideration.

Type		Transport device	Assumed weight	Vertical load per wheel
Hand cart		Pallet truck	Around 1,500 kg	70kg／cm^2 or less
Automated cart		Forklift <battery powered>	Around 5,000 kg	30kg／cm^2 or less
		Pallet truck	Around 1,500 kg	60kg／cm^2 or less
Unmanned carrier		Unmanned carrier	Around 700 kg	30kg／cm^2 or less
Equipment	Had-powered transport	Medical equipment Computers	Around 800 kg	170kg／cm^2 or less
	Self-moving	Bleachers	Around 6,500 kg	20kg／cm^2 or less

TAJIMA

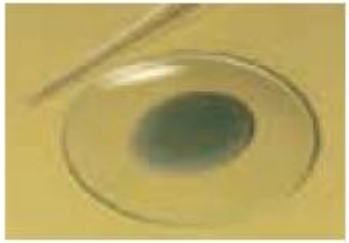
Anti-chemical property

Testing method

■Test overview
JIS A 1454 compliant

■Test method
2 ml of the test reagent was applied to the surface of the flooring and was covered by a watch glass after spreading. The spots were left for 24 hours, after which the surface was wiped clean. Once dry, the area was observed for changes in color, etc.

* Degree of change may differ depending upon the color tone of the flooring. Testing was performed on relatively lighter floors. In cases where a slight change ('B') was apparent, a similar change might be less apparent on darker floors.
* For listed chemicals that contain dyes, etc., coloration may also occur.



■Evaluation standards

A: No change

B: A slight change is apparent

C: A change is apparent

D: A significant change is apparent

If the anti-chemical property is the most important feature,
Anti-chemical floor sheet LAB or Anti-chemical floor sheet LAB PLUS might be an option.

Anti-chemical property

	Chemical (product) name	Concentration	Anti-chemical Vinyl Sheet LAB PLUS		Anti-chemical Vinyl Sheet LAB		M FLOOR		Conductive DS FLOOR		Conductive LE FLOOR		ANTISTAR SHEET		Ordinary vinyl sheet flooring	
			Color	Gloss	Color	Gloss	Color	Gloss	Color	Gloss	Color	Gloss	Color	Gloss	Color	Gloss
Inorganic acid	Hydrochloric acid	37%	B	A	B	A	B	B	A	B	C	C	B	B	C	B
	Nitric acid	61%	C	A	C	A	C	B	C	B	C	C	C	B	C	B
	Sulfuric acid	50%	A	A	A	A	A	B	A	B	A	B	A	A	A	A
	Sulfuric acid	98%	D	D	D	D	D	C	D	B	D	C	D	C	D	C
	Phosphoric acid	85%	A	A	A	A	B	B	B	A	C	B	C	B	C	B
	Hydrofluoric acid	46%	A	A	A	A	C	A	D	B	D	B	B	A	D	B
Organic acid	Acetic acid	99%	A	A	A	A	B	B	A	A	C	C	C	C	C	C
	Formic acid	90%	A	A	A	A	B	B	A	B	C	B	B	B	B	B
	Lactic acid	85%	A	A	A	A	D	B	B	A	C	B	B	B	B	B
	Oxalic acid	Saturation	A	A	A	A	B	B	A	A	A	B	A	A	A	B
	Citric acid	Saturation	A	A	A	A	A	B	A	A	A	A	A	A	A	A
Alkali	Aqueous ammonia	28%	A	A	A	A	A	A	A	A	A	B	A	A	A	A
	Sodium hydroxide	30%	B	A	B	A	B	A	A	B	C	C	B	B	A	B
	Potassium hydroxide	30%	B	A	B	A	B	B	A	A	C	C	C	C	A	B
	Calcium hydroxide	Saturation	B	C	B	C	A	A	A	A	A	A	A	A	A	A
Saline	Potassium permanganate	7.5%	D	B	D	B	D	A	D	A	D	A	D	A	D	A
	Silver nitrate	2.0%	B	A	B	A	B	A	C	A	C	A	C	A	B	A
	Ferric chloride	Saturation	A	A	A	A	B	A	B	A	C	A	B	A	B	A
Organic solvents	Methanol		A	A	A	A	A	B	A	A	C	C	B	B	B	B
	Toluene		A	A	A	A	A	B	A	B	A	A	A	A	A	A
	Xylene		A	A	A	A	A	B	A	A	A	A	A	A	A	A
	Methyl ethyl ketone		A	A	A	A	A	B	A	A	A	B	A	B	A	B
	Ethyl acetate		A	A	A	A	A	B	A	B	A	A	A	B	A	A
	Tetrahydrofuran		A	B	A	B	B	B	C	B	A	C	A	C	A	C
	1.2-dichloroethane		A	A	A	A	A	B	A	C	A	C	A	C	A	C
	Trichlorethylene		A	A	A	A	A	B	A	B	A	B	A	B	A	B
Disinfectants	Benzalkonium chloride (Osvan)	10%	A	A	A	A	A	A	A	A	A	A	A	B	A	B
	Alkyldiaminoethylglycine hydrochloride (Tego-51)	10%	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Chlorhexidine gluconate (Hibitane)	5.0%	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Disinfectant ethanol	80%	A	A	A	A	A	B	A	A	B	B	B	B	A	B
	Povidone iodine (isodine)	10%	B	A	B	A	D	A	C	A	C	B	C	A	C	A
	Iodine (yodochinki/iodine tincture)	6.0%	D	A	D	A	D	A	D	A	D	A	D	A	D	A
	Acrinol (acrinol solution)	0.1%	C	A	C	A	B	A	B	A	B	A	A	A	A	A
	Mercurochrome	2.0%	B	A	B	A	B	A	D	A	C	A	C	A	B	A
	Oxydol	3.0%	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Sodium hypochlorite	5.0%	A	A	A	A	A	A	A	A	B	B	B	B	A	B
	Glutaral (sterihyde)	20%	A	A	A	A	A	A	B	A	A	B	A	B	A	A
	Formalin	35%	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Cresol soap	50%	A	B	A	B	B	B	C	B	B	A	C	C	B	B
	Oxygen bleach		A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Eosin alcohol	1.0%	C	A	C	A	D	A	D	A	D	A	D	A	D	A
Foodstuffs	Coffee		B	A	B	A	B	A	B	A	B	A	B	A	B	A
	Curry		B	A	B	A	C	A	C	A	C	A	C	A	C	A
	Milk		A	A	A	A	A	A	A	A	A	A	A	A	A	A
Former JIS contaminants	Soybean oil		A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Lubricating oil		A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Ethanol	95%	A	A	A	A	B	B	A	B	B	C	B	B	A	B
	Sodium hydroxide aqueous solution	2%	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Acetic acid	5%	A	A	A	A	B	A	A	A	A	A	A	A	B	A
	Hydrochloric acid	5%	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Cement paste		A	A	A	A	A	A	A	A	A	A	A	A	A	A

Wear resistance

■Buildings/areas requiring abrasion resistance

❶Plants with unmanned carriers, forklifts, etc.
❷Hospitals where heavy objects such as mobile operating tables and medical equipment are transported
❸Portions of gymnasiums, citizen centers and event halls (bleachers)

■Tips

❶Selecting flooring: Floorings with a higher wear index will last longer
❷Grade: A practical guideline is how much longer it will last compared to P TILE
❸Appropriate maintenance will greatly extend product lifespan

❶Abrasion resistance of various floors (abrasion durability)

Product Name	Wear amount (mm)	*1 Wear index	3,000 6,000 12,000 24,000
Conductive DS FLOOR	0.07	14,000	Super Heavy Commercial Use
Conductive LE FLOOR	0.07	7,100	Heavy Commercial Use
ANTISTAR SHEET	0.06	6,700	Heavy Commercial Use
M FLOOR	0.07	26,000	Super Heavy Commercial Use
ANTIBACTERIAL M FLOOR	0.07	26,000	Super Heavy Commercial Use
M FLOOR OG	0.07	26,000	Super Heavy Commercial Use
Anti-chemical Vinyl Sheet LAB PLUS	0.05	6,000	Heavy Commercial Use
Anti-chemical Vinyl Sheet LAB	0.05	6,000	Heavy Commercial Use
Ordinary vinyl sheet flooring	0.06	6,700	Heavy Commercial Use
P TILE (2mm)	0.34	6,000	Heavy Commercial Use

*1 Abrasion index: The number of rotations, after 1,000 rotations of JIS A 1451 testing, to remove the entire effective layer. Reflects flooring surface shape and quality. (Embossed flooring includes minus-correction, etc.)

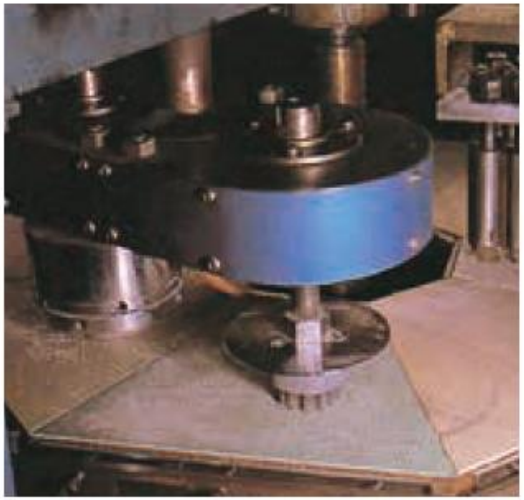
Testing method

■Test overview

JIS A 1451 construction materials/components abrasion test methods compliant

■Test method

The surface of the test sample was sprinkled with sand and an abrasive steel plate, brush and bar was rotated over the surface in order at a speed of once per minute. After 1,000 rotations, the difference in thickness before and after testing was measured.



If the wear resistant is the most important feature, M Floor might be an option.

Crack elongation

After being poured, concrete dries out over many year, contracting and often leading to hair line cracks. In areas where functional flooring is required, it is often preferable to limit dust produced by such cracks from spreading. Compared to hard coated floors, flooring in this series is more flexible and resistant to breaking, and thus better at preventing dust from leaking into rooms.

Product Name	Tensile strength N/cm²	Elongation %
Conductive DS FLOOR	1,240	60
Conductive LE FLOOR	780	70
ANTISTAR SHEET	710	100
M FLOOR	1,550	90
ANTIBACTERIAL M FLOOR	1,400	90
M FLOOR OG	1,350	110
Anti-chemical Vinyl Sheet LAB PLUS	750	139
Anti-chemical Vinyl Sheet LAB	750	139
Ordinary vinyl sheet flooring	700	150
Ordinary epoxy coated floor	435	2.5
Ordinary urethane coated floor	100	140

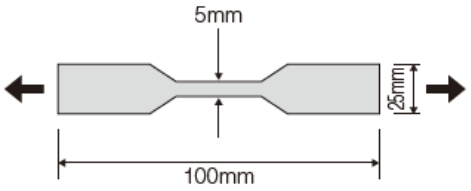
Testing method

■Test overview

JIS A 6008 compliant

■Test method

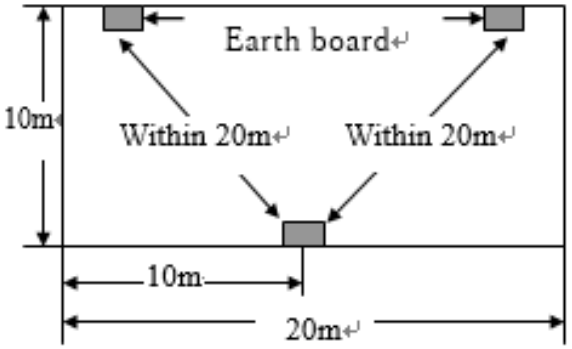
A test sample was created as shown in the illustration. Both ends were fixed in place and stretched in the direction of the arrows using a tension tester at a speed of 200 mm/minute. Strength (N) was measured at the moment when the piece broke. The amount of elongation at the time of break was also measured to calculate how far the piece had stretched from its original length.



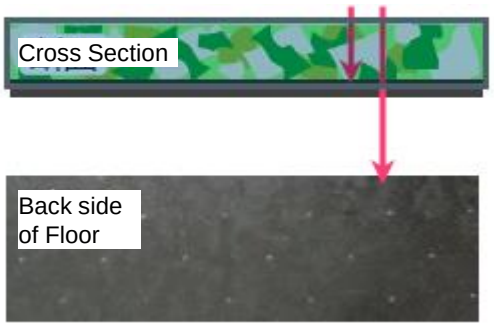
Generally our material is softer compared to the stiff material, thus it is not likely to be ruptured due to cracks of the concrete.

- Adhesive to be used : Epoxy type resin or the like.
  No need to be conductive adhesive type.

- Earth board need to be installed

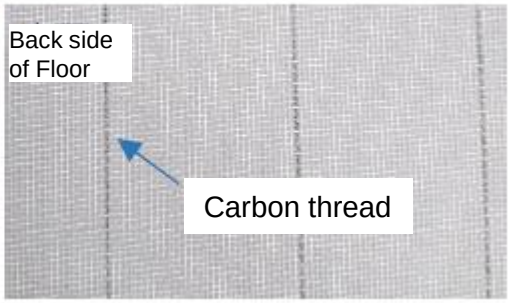


Conductive DS Carbon layer



Conductive LE Carbon layer

Antistar Sheet



The selection of functional floor material depends on what the most important property is.

Antistatic/Conductivity
→Conductive DS Floor/Conductive LE Floor
Antistar Sheet(Cost effective option)

Chemical Resistance
→Anti-chemical Floor Lab/ Anti-chemical Floor Lab＋
*Various design are available for both sheets

Dynamic Load Resistance
→M Floor

Wear Resistance
→M Floor/ Conductive Floor DS

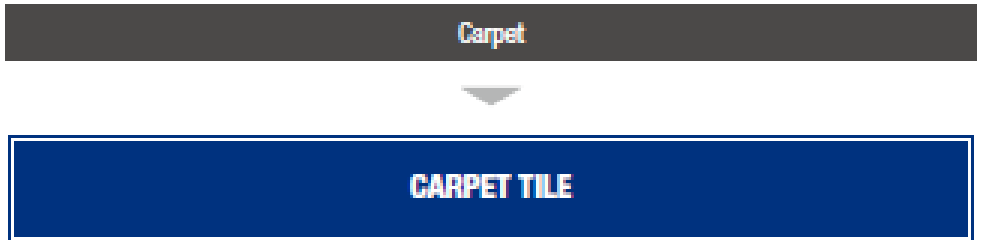
The most important thing is to select the right material for right place.

For General Area

Our Product Overview

1, Vinyl Flooring

2, Carpet Tiles



3, Others

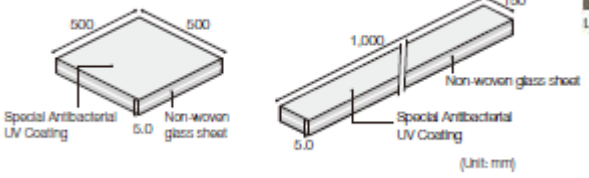
VINYL LOOSE LAY TILE

LAY FLAT TILE

LN-1005, 4010-7014 (TAPIS LUCIR), Window Glass ORIFY

LN-1535 (monolithic), LN-1008, 1009 (installed in equal proportion, random pattern)

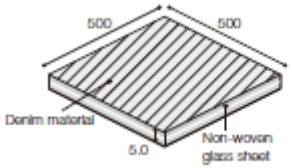
Tile Size



(Unit: mm)

DENIM FLOOR

Tile Size



(Unit: mm)

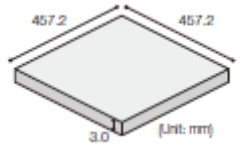
VINYL TILE

VCT(Vinyl Composition Tile)

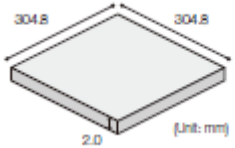
A-27, 74, 79, 94, 95, 97

682-901, 902, 903, 904, 907, 909, 916, 923, 927 (1/4 cut)

Tile Size

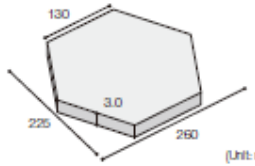


Tile Size



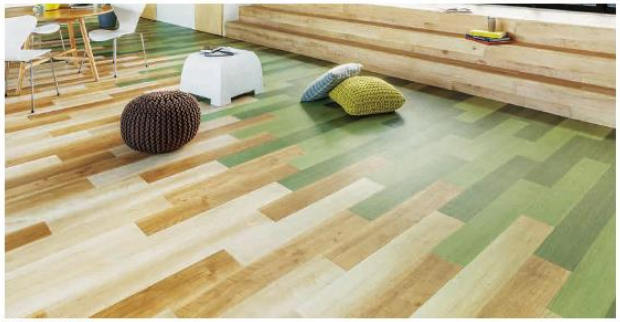
Tile Size

X Size



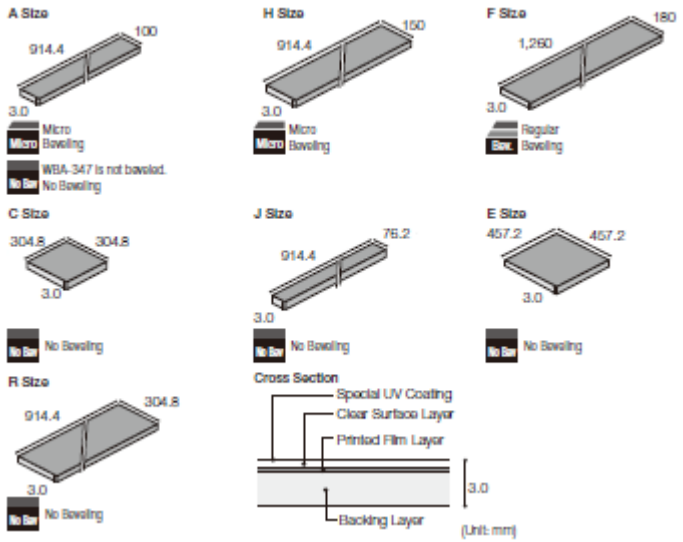
LVT(Laminated Vinyl Tile)

MBE-227, 228, MBR-215, 226, 227



WBH-620, 621, 602, 416

Tile Size/Beveling/Cross Section



SHEET VINYL FLOORING

Sheet Vinyl without foam layer

MJ-1323 (Broad Oak)

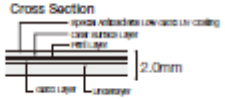
BW-83208

TF-305M

Sheet Size/Cross Section

Sheet Size

Cross Section



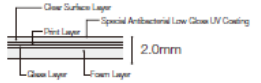
Sheet Vinyl with foam layer

ME-4215, 4226, 4227, 4231

Sheet Size/Cross Section

Sheet Size

Cross Section

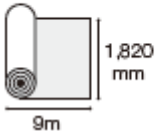


AC-3258

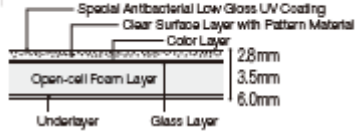
AC-2002, 2004, 2005

Sheet Size/Cross Section

Sheet Size



Sand



TAJIMA

SLIP RESISTANT VINYL FLOORING

VIEWGISTA

VGG-701

VAQ-801

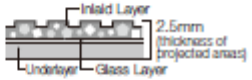
Sheet Size/Cross Section/Configuration

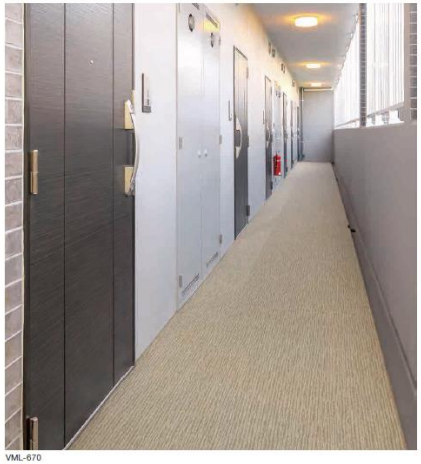
Sheet Size

1,820mm
1,620mm
1,350mm
1,250mm

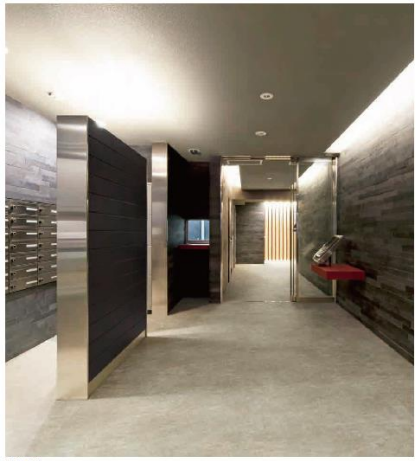
10m

Cross Section Image





VML-670



VML-660

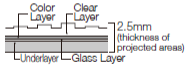
Sheet Size/Cross Section

Sheet Size

1,820mm
1,350mm

10m

Cross Section Image



Other Slip resistant flooring

CL-322

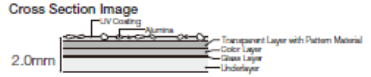
Sheet Size/Cross Section

Sheet Size

1,820mm

9m

Cross Section Image



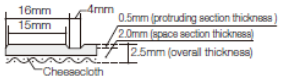
Circle Pattern

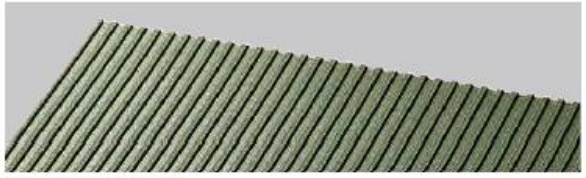
Sheet Size

1,230 mm

10m

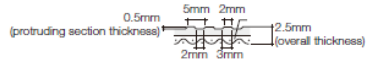
Cross Section Image/Circle Pattern





Rib Pattern (vertical)

Cross Section Image/Rib Pattern (vertical) (horizontal)



TAJIMA

FUNCTIONAL FLOORING

M Floor

M-176, 174

■Dynamic Load Resistance

Dynamic Load Resistance Data (JIS A 1454) A-2 (2000N load)

Product Name	Thickness (mm)	Time Before Appearance of Abnormality (0 1h 2h 3h 4h 5h 6h 7h 8h)	Type of Abnormality
M FLOOR	2.0		Swelling
Ordinary Vinyl Flooring	2.0		Swelling

* The data provided above is comprised of measured values, not guaranteed values.

■Visibility

Assuming that the floor covering may be installed in operating rooms, we provide with a color pattern, on which you can easily find a suture needle lying on the floor.

M FLOOR

Vinyl Flooring with Basic Color Pattern

CONDUCTIVE FLOOR

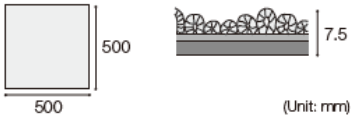
LE-311

CARPET TILE

TS Series(Standard Line)

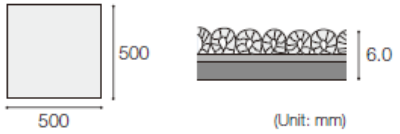
TSD-365

Tile Size/Cross Section



Plain 481-223, 225, 280, 282, 284, 285

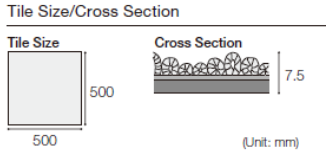
Tile Size/Cross Section



TZ Series(Mid to High end line)

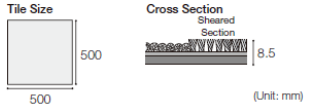
436-4006 (monolithic pattern)

Tile Size/Cross Section



4050-7402 (monolithic pattern)

Tile Size/Cross Section



P Tile or other composition tile for its economic price range and durability

P TILE Classic

Characteristic P tile standard design developed by Tajima. Impressive spotted design

P-60

WOOD CRAFT

A Wood pattern finish tile available in many color tones

648-807, 808, 810, 811

644-205, 207, 208, 648-802, 804, 809

DOLCE

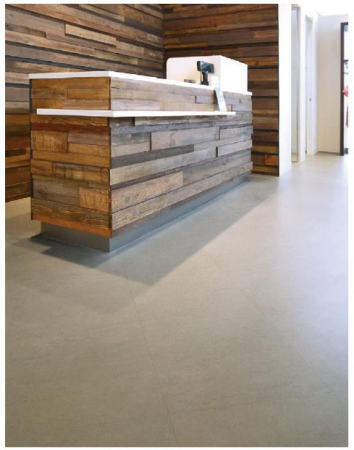
Expressing the colors of nature

682-933

MORTALIKE

GOOD DESIGN AWARD 2017

The matte grey tile with a stylish mortar tone finish



647-702

647-706, DMH-201

TAJIMA

MAJESTA for its design variety or PARMALEUM Series for its economic price range

MAJESTA NO WAX

Multi-functional sheet with high designability. Various colors and patterns available

MJ-1323 (Broad Oak)

MJ-1142 (Concrete)

PERMALEUM EM NO WAX

While maintaining an outstanding level of performance, our standard vinyl sheet flooring has improved as a NO WAX maintenance product

4070M, PM-116M

NO WAX PERMALEUM STREET

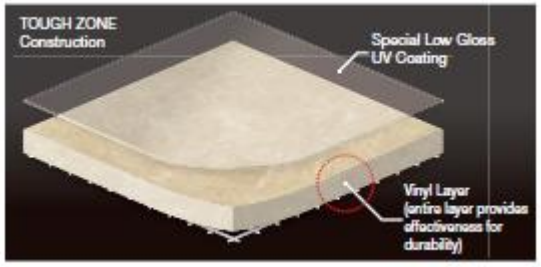
Embossed vinyl sheet flooring with abstract wood design

PT-113M

TOUGH ZONE for its durability or U-MANITY Series for its shock absorbing performance

TOUGH ZONE NO WAX+

Highly durable sheet with dynamic load resistance and wear resistance



TF-305M

U-MANITY 28/35/60 NO WAX+

Achieves both a high level of security and functionality with its low-gloss, high-quality texture and foam layer

AC-3201, 3231, 3232, 3233, 3239

AC-3258

AC-2002, 2004, 2005

LAY FLAT TILE or Carpet tile TAPIS Series for its installation easiness and antistatic performance

LAY FLAT TILE NO WAX NO WAX+

Low luster, no wax maintenance Vinyl Loose Lay floor covering tile. Function such as antibacterial performance harmonizes with high-quality appearance

LN-1005, 4010-7014 (TAPIS LUCIR), Window Glass ORIFY

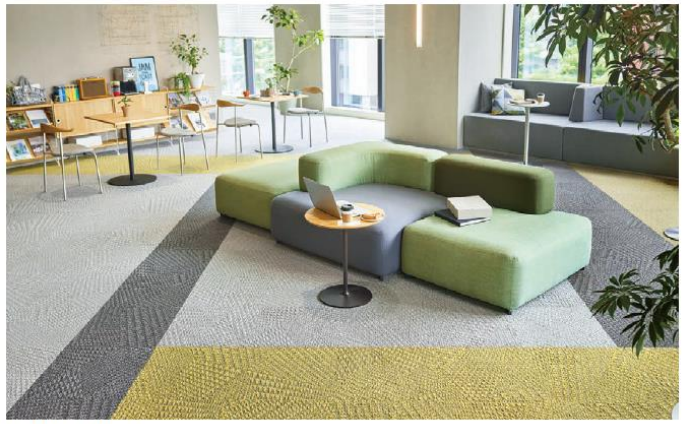
LN-1606, 1023, 1027, 1030

LN-1535 (monolithic), LN-1008, 1009 (Installed in equal proportion, random pattern)

DESIGN

TAPIS TRIOS

The use of triangles creates a fun and expansive design



TZ10-682, 683, 684

TAPIS MONOCHROME TWEED

The interplay of different materials creates a captivating soft tweed pattern

TZ08-641, 642 (monolithic pattern)

TAJIMA