

# 14 Antistatic property

As indoor air is controlled better now, flooring materials ranked C or better are mostly sufficient as the flooring at hospitals, welfare facilities for old people and residence. If you need to prevent malfunctioning of inspection devices, 'rank' and 'guidelines for uses' shall be referred for flooring selection.

## Antistatic property of each flooring

Product Name	Overall Thickness (mm)	Surface Resistance Value(Ω)	Volume Resistance Value(Ω)	* Static Charge to Human Bodies (kv)					Evaluation					
				0.10	0.5	1.0	5.0	10						
Vinyl Sheets	NW	FS	NONWAXLEUM NW (TS7000 series)	2.0	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>				3.0 or above	C			
			NONWAXLEUM NW (TS5000 series)	2.0						3.0 or above	C			
			MATURE NW	2.0						3.0 or above	C			
			DEODORANT NS TOWARE NW	2.0						3.0 or above	C			
			FLOORLEUM SOILUD NW/LATTICE NW/FLAKE NE/NATTY NW	2.0						3.0 or above	C			
	HS	SF FLOOR NW	2.8	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>					3.0 or above	C			
		SF FLOOR NW + UNDERLAY SHEET	7.3						3.0 or above	C				
		SF FLOOR NW 3.5MM (made-to-order product)	3.5						3.0 or above	C				
		HOSPILEUM NW	2.0						3.0 or above	C				
		HOSPILEUM NW + UNDERLAY SHEET	6.5						3.0 or above	C				
	Vinyl Tiles	FS	NW	FLOORLEUM PLAIN/MARBLE	2.0	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>				3.0 or above	C		
				ANTIBACTERIAL FLOORLEUM PLAIN/MARBLE	2.0						3.0 or above	C		
				ANTIBACTERIAL FLOORLEUM PLAIN/MARBLE + UNDERLAY SHEET	6.5						3.0 or above	C		
				FLOORLEUM FREE	2.0			3.4x10 <sup>9</sup>	2.7x10 <sup>7</sup>	0.5			B	
				OPELEUM	2.0			2.0x10 <sup>10</sup>	2.8x10 <sup>8</sup>	0.6			B	
				FLOORLEUM RITTI EMBOSS	2.0 (salient)			1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>				3.0 or above	C
				SUPER K SHEET	2.0			3.2x10 <sup>9</sup>	2.4x10 <sup>8</sup>	0.3			B	
				SUPER K SHEET EXCELLA	2.0			7.0x10 <sup>9</sup>	2.0x10 <sup>9</sup>	0.5			B	
NS4400 AQUATREAD				2.0	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>			1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>				3.0 or above	C	
EARTHLEUM				2.0	9.0x10 <sup>4</sup>			6.2x10 <sup>4</sup>	0.1			A		
NEWSTANLOAD		2.0	4.4x10 <sup>10</sup>	3.5x10 <sup>9</sup>	0.4			B						
HS		NS FLATTY	2.0	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>					3.0 or above	C			
		BATHNA ARTI	2.8						3.0 or above	C				
	BATHNA FLORE	3.5						3.0 or above	C					
Vinyl Tiles	NW	FT	E-CLEAN PREMIUM NW	3.0	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>				3.0 or above	C			
			ROYALWOOD / ROYAL STONE	3.0	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>				3.0 or above	C			
	KT	MATICO V	2.0	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>					3.0 or above	C			
		FASOL PLUS	3.0						3.0 or above	C				
	NW	FOA	LL FREE 40NW-EX	4.0	8.6x10 <sup>9</sup>	1.7x10 <sup>9</sup>	0.5			B				
		LL FREE EXCELLA (made-to-order product)	5.0	4.8x10 <sup>9</sup>	3.1x10 <sup>9</sup>	0.4			B					
Carpet Tiles			GA-100SA (super antistatic)	6.5	6.4x10 <sup>8</sup>	2.0x10 <sup>7</sup>	0.4			a				
			GA-100	6.5	5.9x10 <sup>11</sup>	1.9x10 <sup>11</sup>	0.6			a				
			GA-3600	6.8	5.7x10 <sup>9</sup>	3.3x10 <sup>8</sup>	0.4			a				
			GA-8900	6.0	1.1x10 <sup>12</sup>	5.0x10 <sup>10</sup>	0.5			a				
			GA-8800EM	7.0	1.1x10 <sup>12</sup>	5.5x10 <sup>11</sup>	0.9			a				
			GX-5200 RUSCELLO	7.5	2.9x10 <sup>11</sup>	1.0x10 <sup>11</sup>	1.0			a				
			GX-9300V CORENTEV	6.5	2.4x10 <sup>11</sup>	1.2x10 <sup>11</sup>	0.7			a				
			DC-1100	10.0	7.0x10 <sup>10</sup>	2.3x10 <sup>10</sup>	0.4			a				
Others			Linoleum	2.5	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>	1.0x10 <sup>10</sup> ~1.0x10 <sup>15</sup>				3.0 or above	C			

FS heterogeneous vinyl sheet HS heterogeneous vinyl sheet with foamed layer FT heterogeneous vinyl tile KT vinyl composition tile FOA vinyl loose lay tile

## Volume Resistance Value (for vinyl floorings)

[ Criteria for Evaluation ] TOLI recognize the A,B ranked as anti-static product

Rank	Volume Resistant Value	Guidelines for Uses
A	1x10 <sup>4</sup> ~1x10 <sup>7</sup> Ω	Conductive grade :computer control rooms
B	1x10 <sup>7</sup> ~1x10 <sup>10</sup> Ω	Antistatic grade : for Operation room, inspection room or Dispensary room
C	1x10 <sup>10</sup> ~1x10 <sup>15</sup> Ω	General grade: where no device-error risk is anticipated due to static electricity.
D	1x10 <sup>15</sup> Ω <	Unsuitable for indoor flooring

### Guidelines for Evaluating the Data;

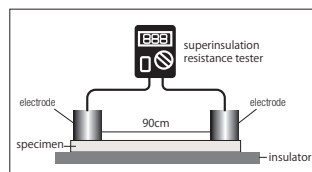
Antistatic property of vinyl floor covering is evaluated by volume resistance value. The less the resistance is, the quicker the static electricity is discharged. And the more humid room is, the more quickly the electricity is discharged.

### Test Method (vinyl floor covering);

#### Antistatic property test (at 23°C ,25%RH)

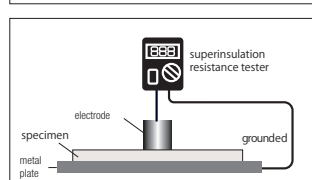
##### 1. Surface resistance test (Independent test by TOLI)

With the use of the ultrasonic Insulation Resistance Tester, check the direct current through flooring between two electrodes. The less resistance means the less charge of static electricity.



##### 2. Volume resistance test (according to JISA 1454)

With the use of the same tester as "1", check the electric resistance between two electrodes. One is placed on flooring, the other is connected to the metal plate. The smaller the resistance is, the less static electricity generates.



Vinyl floor covering is developed based on antistatic property, not on static charge to human bodies.

Antistatic property of carpet tile is tested in accordance with JIS L 4406.

\*All the testing was conducted by TOLI's in-house labs unless otherwise specified. The data shows actual test results, not guaranteed values.

## Static charge to human body (for carpet)

[ Criteria for Evaluation ]

Rank	Static charge	Guidelines for Uses
a	≤ 1.0kv	The rooms with OA equipment, or antistatic area
b	≤ 2.0kv	General offices or hotels at 10%RH or below
c	≤ 3.0kv	General area requiring little antistatic effect
d	3.0kv <	Places with almost no static electricity generated

### Guidelines for Evaluating the Data;

Test method to measure the static charge to human body. This Japanese original test method is widely adopted in Japanese carpet industry according to JIS. Static charge below 3kv is usually recognized as safe level.

Note; Although vinyl floorings are installed onto subfloor with adhesive at job sites, a test piece in this test method is loose-laid on insulation material. Thus, static charge on vinyl floor in this test shows higher value than actual case.

### Test Method;

#### Assessment of static electrical property-walking test (according to JIS1021-16)

This test is to measure static charge to human bodies by stepping on specimen placed on insulator. The less the value is, the better antistatic property flooring has. (at 23°C, 25% RH. Shoes with synthetic rubber sole.)

