

10 Shock Absorption

Shock absorption of the flooring is evaluated by the impact value of the dropping item onto the flooring. This impact value is the guideline for reducing risk of injury in case of falls. Elastic floor with cushioning effect is generally supposed to be superior in impact-absorption.

Shock Absorption of each floor covering

Product Name		Overall Thickness (mm)	high	low	Evaluation
			G Value	60 80 100 120 140	
Vinyl Sheets	FS	NONWAXLEUM NW (TS7000 series)	2.0	141	D
		NONWAXLEUM NW (TS5000 series)	2.0	141	D
		MATURE NW	2.0	140	D
		DEODORANT NS TOWARE NW	2.0	143	D
		FLOORLEUM SOILUD NW	2.0	144	D
		FLOORLEUM LATTICE NW	2.0	144	D
		FLOORLEUM FLAKE NW	2.0	144	D
		FLOORLEUM NATTY NW	2.0	144	D
	HS	SF FLOOR NW	2.8	126	C
		SF FLOOR NW + UNDERLAY SHEET	7.3	91	A
		SF FLOOR NW 3.5MM (made-to-order product)	3.5	120	C
		SF FLOOR NW 3.5MM + UNDERLAY SHEET	8.0	90	A
		HOSPILEUM NW	2.0	129	C
		HOSPILEUM NW + UNDERLAY SHEET	6.5	93	A
		FLOORLEUM PLAIN NW/MARBLE NW	2.0	145	D
		ANTIBACTERIAL FLOORLEUM PLAIN/MARBLE	2.0	143	D
	FS	ANTIBACTERIAL FLOORLEUM PLAIN/MARBLE + UNDERLAY SHEET	6.5	94	A
		OPELEUM	2.0	144	D
		FLOORLEUM RITTI EMBOSS	2.0 (salient)	145	D
		SUPER K SHEET	2.0	144	D
		SUPER K SHEET EXCELLA	2.0	144	D
		NS4400 AQUATREAD	2.0	140	D
		NEW STANLOAD	2.0	142	D
		NSFLATY	2.0	130	D
	HS	BATHNA ARTI	2.8	129	C
		BATHNA FLORE	3.5	110	B
		BATHNA REALDESIGN	4.0	108	B
		E-CLEAN PREMIUM NW	3.0	144	D
Vinyl Tiles	NW	ROYAL WOOD / ROYAL STONE	3.0	144	D
		MATICO V	2.0	146	D
	KT	FASOLPLUS	3.0	147	D
		LL FREE 40 NW-EX	4.0	144	D
	FOA	LL FREE EXCELLA (made-to-order product)	5.0	138	D
Carpet Tiles		GA-100	6.5	125	C
		GA-3600	6.8	124	C
		GA-8900	6.0	128	C
		GA-8800EM	7.0	128	C
		GX-5200 RUSCELLO	10.5	97	A
		GA-100 + UNDERLAY SHEET FOR CARPET TILES	10.0	99	A
		GA-8900 + UNDERLAY SHEET FOR CARPET TILES	7.5	123	C
		GX-9300V CORENTE V	6.5	124	C
		DC-1100	10.0	111	B
Others		Linoleum	2.5	142	D
		Coated floor (flat type)	-	150	D
		Cork tile	5.0	116	C
		Wood floor	12.0	143	D
		Concrete	-	150	D
		Tatami	55.0	55	A

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

[Criteria for Evaluation]

Rank	G Value	Guideline for uses
A	≤100G	e.g. gymnasium floor
B	100G < ≤ 115G	e.g. schools, welfare facilities
C	115G < ≤ 130G	General flooring where safety is required in case of tumble
D	General Flooring	General walking area

Guidelines for Evaluating the Data;

Shock absorption is mainly affected by subfloor material rather than floor covering. If concrete subfloor is compared with timber-structured subfloor, the latter is much superior in shock absorption. Subfloor makes much bigger difference in shock absorption than the material difference of floor covering. Shock absorption is highly improved by the use of underlayment even on the same subfloor. Shock absorption is reflected in G value. The bigger the G value is, the more the impact damage is caused, that is, the worse the shock absorption is.

[Note] Underlay Sheet

We have underlay sheet for regular vinyl Sheet or SFFloor NW, which improves the shock absorption of the floorings. Underlay sheet for Carpet tile is also available.

Test Method;

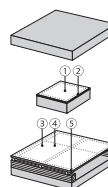
In accordance with 8th item method of testing floor hardness' of JIS A6519 Steel Furring Components for Gymnasium Floors, drop the weight as heavy as human head (3.85kg) from 20cm height onto the specimen. The accelerometer attached on the weight shows different G values on different specimen as shown in above chart. The less the figure is, the more shock is absorbed.



Testing machine by TOLI R&D

Comparison of Shock Absorption between Concrete and Wood

Subfloor structure	Dropped point	G value
Concrete Slab		150
Concrete Slab + Sleeper + 12mm Plywood	① Center between sleepers	44
	② Just above sleeper	117
Concrete Slab + Sleeper + joist + 12mm Plywood	③ Center between joists	44
	④ Just above joists	66
	⑤ Just above joist on sleeper	102



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