Impact-Absorbent Property

of Vinyl Sheets, Tiles & Carpet Tiles

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Use below data as a performance index to prevent injuries due to fall.

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

The smaller G value is, the better impact absorption floor has.

Category	Product name	Thickness (mm)	Shorter bar represents better impact absorption.(G value) High absorption ⟷ Low absorption	G value	m/s²	Evaluation
Vinyl sheet	**SF FLOOR NW + Underlay sheet**	7.3		84	823	**S**
	HOSPILEUM NW + Underlay sheet	6.5		85	833	**S**
	CARESAFE NW	4.5		94	921	**S**
	CF SHEET-SD	3.5		94	921	**S**
	ARENA FIT	4.5		96	941	**S**
	BATHNA REAL DESIGN	3.5		104	1019	**A**
	CF SHEET-P NW	2.3		108	1058	**A**
	BATHNA FLORE	3.5		110	1078	**A**
	NS REAL DESIGN NW	2.5		111	1088	**A**
	SF FLOOR 3.5mm (made to order)	3.5		115	1127	**A**
	CF SHEET-H	1.8		117	1147	B
	SF FLOOR NW	2.8		118	1156	B
	HOSPILEUM NW	2.0		125	1225	B
	BATHNA ARTI	2.8		129	1264	B
	NS FLATY	2.0		130	1274	C
	OPELEUM	2.0		144	1411	C
	FLOORLEUM PLAIN/MARBLE NW	2.0		145	1421	C
Vinyl tile	LOOSELAY 50 NW-EX	5.0		143	1401	C
	ROYAL WOOD/ ROYAL STONE	3.0		144	1411	C
	MATICO V	2.0		146	1431	C
	TOUGHTEC TILE	3.0		149	1460	C
Carpet tile	**GA-100 + Underlay sheet for carpet tile**	10.5		97	951	**S**
	GA-8900 + Underlay sheet	10.0		99	970	**S**
	DC-1100	10.0		111	1088	**A**
	CORENTE V (GX-9300 V)	6.5		124	1215	B
	GA-100	6.5		124	1215	B
	GA-8900	6.0		128	1254	B
Others	**Tatami**	55.0		55	539	**S**
	Cork tile	5.0		116	1137	B
	Linoleum	2.5		142	1392	C
	Wooden flooring	12.0		143	1401	C
	Coated floor (flat-surface type)	–		150	1470	C
	Concrete *1	–		150	1470	C

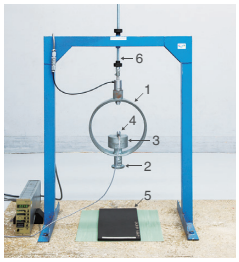
50 100 150

[Criteria for Evaluation]

Rank	G value	m/s²	Guide for uses
S	100 G or less	980	Used as a safety floor, expected to protect from injury by falls.
A	Over 100 G– 115 G	980～1127	Used at area with high possibility of falls.
B	Over 115 G– 130 G	1127～1274	Used as an ordinary flooring where safety is expected in case of falls.
C	Ordinary floor (over130G)		Used as an ordinary flooring.

●Test Method

Drop the weight as heavy as assumed human head (3.85kg) from 20±1 cm height onto the floor specimen. The accelerometer attached on the weight shows G values of each floor specimen, which represents impact absorption of each flooring.



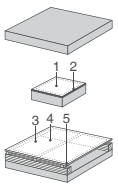
Measuring system of head model's impact onto floorings

Ref.	Description
1	Steel frame (216.3mm dia., 8.2mm thick, 40mm wide)
2	Steel head (50mm curvature radius, 50mm diameter)
3	Weight (1.34kg)
4	Accelerometer
5	Rubber plate (8mm thick, Shore A hardness scale-37), 300mm×150mm dimensions)
6	Hanging wire

●Guide for Evaluating the Data

Impact absorption is reflected in G value. The **bigger the G value** is, the more the impact damage is caused. Impact absorption is mainly affected by subfloor materials rather than floor coverings. 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 coverings. Impact absorption can highly be improved by the use of underlayment even on the same subfloor.

●Comparison of Shock Absorption between Concrete and Wood *1

	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

Note Underlayment

We have Underlay Sheet for ordinary vinyl sheet and SF Floor NW, which will Improve the impact absorption of the floorings. Underlay sheet for Carpet tile is also available.

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