

ECOFLOORS

QuietFloor Acoustic Underlay

Abzorba Mat

Flexible acoustic sheets suitable for Structural Isolation.

Description

Abzorba Mat is a 6mm thick flexible rubber sheet.

Applications

- Abzorba Mat can be used as an impact absorbing layer between all types of products, i.e. under timber flooring, floor tiling, on stair treads, under sports floors, under timber-framed walls, under timber battens/joists.

Notes

- Floors must be levelled to +/- 3mm over 3m.
- Abzorba Mat may vary slightly in thickness as all types of mats of this structure will.
- Abzorba Mat requires a 3mm expansion joint every 3m; this is particularly important on balconies.
- Abzorba Mat can only be installed by approved installers to ensure a high quality control.
- Waterproof membrane may be required on some concrete slabs.

Adhesives are to be as follows

- When gluing Abzorba Mat directly to concrete with tiling on top, a recommended Holdfast product to be used.
- A recommended Holdfast product to be used in the wet areas under Abzorba Mat and when tiling on top of Abzorba Mat.

COMPARATIVE IMPACT ISOLATION TESTS FIELD MEASUREMENT

As requested the impact noise isolation of the 6 test samples on the floor of Apartments at 41 The Esplanade were measured on June 26, 2003. This letter provides the results of the field tests carried out to establish the impact isolation provided by the floor ceiling system for each of the 6 samples.

IMPACT ISOLATION RATING SYSTEMS

Two methods are used to assess impact noise from flooring systems are:-

- “Weighted Standardised Impact Sound Pressure Level (L’nTw) as defined in the International Standards method as described in ISO 140-7:1998 and 717-2:1996. This method will be referenced in the Building Code of Australia.
- Impact Isolation Class (IIC) as defined in the American Standard ASTM E1007-97 and E989-89. The IIC has been widely used in Australia in the past.

The *International Standard ISO 717-2* rates a flooring system in terms of the resultant noise level produced in the room under the floor. The lower the rating the lower the noise level of impact heard within the room. As the reverberation time in the room can vary significantly between a bare room still under construction to a fully furnished room, the International Standard allows for the ‘standardisation’ to a 0.5 second reverberation time in all frequencies. In practice it is found that most furnished rooms have a 0.5 second reverberation time irrespective of volume. This is an appropriate reporting measure, which to some extent, takes out the variance of room volume and absorption in the receiving room. The Impact sound insulation determined by the measurements is therefore reported as the “Weighted Standardised Impact Sound Pressure Level (L’nTw).

The *American Standard ASTM E989* rates flooring systems in terms of a Impact Isolation Class denoted as IIC. A high IIC would indicate a high performance floor system. To take account of variable acoustic absorption that exists in the receiving room particularly in field testing, the Impact Isolation Class is ‘normalised’ to a total of 10m² of acoustic absorption in the receiving room. In small receiving rooms this ‘Normalising’ tends to increase the calculated IIC result. For large receiving rooms, the ‘Normalising’ tends to reduce the calculated IIC performance.

As noted above, the IIC *Normalised* to 10m² absorption has been the common measure used in the building industry in Australia. As most Australian Standards tend to be based on the ISO standards, the ISO Weighted Standardised Impact Sound Pressure Level (L’nTw) will be referenced in building standards.

Both measures are presented in this report.

TEST PROCEDURE

The test method was based on the requirements of ISO 140-7 and ASTM E1007.

Building: The floor tested was a bedroom floor on the third floor.

Noise Source: A Norwegian Electronics NOR211 Tapping Machine was used to generate impact noise and the resultant noise level was measured in the unfurnished room below. The measurements were carried out as a sweep of the space. The tapping machine was set up on the four diagonal locations on the sample and on the bare concrete floor directly adjacent.

Floor Ceiling Construction: The floor ceiling construction consisted of:

- 200mm concrete slab
- 250 to 300mm ceiling void with R 2.5 polyester insulation
- 10mm plasterboard ceiling resiliently suspended

Receiving Rooms: The receiving room was the unfurnished bedroom on the floor below. The volume of the room tested was 45m³.

Noise Level Measurements: Noise level measurements were taken with a Bruel & Kjaer Type 2260 Investigator. The meter was calibrated prior to and after measurements with no significant drift noted.

One third octave band sound pressure level measurements (Leq) were taken as a sweep of the room for each of the noise source locations.

Background noise level was measured in the receiving room. Where the impact sound levels were within 10 dB of the background noise levels, a correction for background noise has been made in accordance with ISO 140-7. No adjustments were required.

Absorption in the Receiving Room: The absorption in the receiving room was determined from the Reverberation Times (RT) of the rooms. The RT's were measured in 1/3 octave bands in each of the rooms from an impulse noise source using the B&K 2260.

Measurement Results: The results of the measurements are set out in the attached Field Impact Sound Insulation – Data Sheets. The results can be summarised as follows:

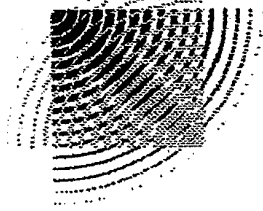
		<u>L'nt,w</u>	<u>C1</u>	<u>II</u>
Bare Concrete		71	-9	37
12mm Tasmanian Oak strip flooring on				
Sample 1	6mm Dri-Bond	61	-3	48
Sample 2	Abzorba Mat A 6mm	57	-1	51
Sample 3	Abzorba Mat B 6mm	59	-2	49
Sample 4	Abzorba Mat C 6mm with 12mm plus underlay	64	-4	44
Sample 5	5mm Impact Mat (Embelton)	59	-2	49
Sample 2	ASA 2mm Peel & Stick	60	-3	49

COMPARISON WITH BCA

The current BCA does not address impact isolation floors.

The proposed amendment to the BCA establishes a criteria of $L_{ntw} + C_1$ of 62 dB.

All samples except Sample 4 achieved this performance.



FIELD IMPACT SOUND INSULATION - DATA SHEET

PROJECT: 41 The Esplanade South Perth
 Task: Impact Isolation
 Details: Zorba-Mat A 6mm
 Client: New Era Flooring

Meas. Date: 2003 Jun 30
 Meas. Parameter: LLeq
 Tapping Machine: NE Nor 211
 Receiving Room
 Volume: 45 m3
 No. of Source posn: 1
 Mic. posn: 2 sweeps
 RT meas: 2 Imp.
 SLM: B&K 2260

Description of Specimen:
 Floor Construction
 200 Concrete slab
 250 to 300mm ceiling depth with R2.5 polyester insulation
 10mm plasterboard resiliently fixed

Test sample
 Zorba -Mat A 6mm
 Bostik Ultraset glue
 12mm Tasmanian Oak strip flooring

L'nt,w: is Weighted Standardised Impact SPL
 Ci: Impact correction term
 IIC: is Impact Isolation Class

	L'nt,w	Ci	IIC	
Bare Concrete	71	-9	37	ASTM E1007-97 & E989-89
Zorba-Mat A 6mm	57	-1	51	ISO 140-7:1998 & 717-2:1996

Centre Frequency Hz	Bare Concrete dB	Zorba-Mat A 6mm dB	Impact Ref Contour dB
100	46.8	48.27	59
125	54.3	52.58	59
160	54.8	54.54	59
200	57.7	56.18	59
250	60.1	57.03	59
315	63.4	61.95	59
400	67.5	64.99	58
500	66.9	63.94	57
630	68.1	63.36	56
800	67.3	59.88	55
1k	67.6	54.17	54
1.25k	67.1	50.41	51
1.6k	65.9	46.76	48
2k	65.6	43.76	45
2.5k	63.6	38.33	42
3.15k	60.6	32.88	39

L'nt,w 71 57

