

TEST SPECIMEN: 3mm Cork, 6mm Coconut Fiber, and 3mm Cork Composition Underlayment with a Hardwood Floor on a 5" cast-in-place Concrete Slab

TESTED FOR: Amorim Industrial Solutions

LOCATION: The William Oliver Building
Atlanta, GA
Units 1201 & 1101

TEST DATE: March 12, 2003

BY: Harold L. Merck, INCE

Test Method:

The reported measurements and results were obtained in conformance with the methods and procedures defined in American Society for Testing Materials (ASTM) designations E 1007, Standard Test Method for Field Measurement of Tapping Machine Impact Sound Transmission Through Floor-Ceiling Assemblies and Associates Support Structures" and E 989 "Classification for Determination of Impact Insulation Class (IIC)" except as noted.

Specimen Description:

According to the underlayment manufacturer, the tested specimen consisted of a floor-ceiling assembly constructed as follows (top to bottom): 9/16" (14.3mm) thick Harris Tarkett tongue and groove hardwood flooring on an underlayment composition consisting of 3mm cork, 6mm coconut fiber, and 3mm cork on a cast-in-place structural concrete slab. The hardwood floor was isolated around the perimeter with a 0.75 inch (19 mm) by 0.24 inch (6mm) perimeter isolation barrier. The concrete slab consisted of a pan type construction approximately 5" (127 mm) thick over 9" (228.6mm) deep by 4" (101.6mm) wide cast-in-place beams. The underside of the concrete slab was painted and exposed to the receiving room space below. The area of the floor specimen was approximately 240 ft² (22.3 m²). The weight of the floor assembly was not determined.

Test Environment:

The source and receiving rooms were identically finished living-dining-kitchen room combinations with dimensions of 19' 0" (5.8 m) by 16' 8" (5.1 m). The source room was unfurnished and the receiving room was furnished. The interior volume of the receiving space was approximately 2,842 ft³ (80.5 m³) and was located on the 11th floor of a 17 story building. All doors and windows were closed during the measurements.

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Test Procedures:

The test procedure followed methods defined in ASTM E 1007. The receiving level measurements were made using a standard tapping machine at the four prescribed positions on the test floor in accordance with the standard. The receiving room impact levels were spatially averaged and corrected for background sound levels. The sound absorption of the receiving room was determined from space averaged measurements of the reverberation time. Flanking sound transmission was not verified.

Instrumentation:

Larson Davis model 824 Precision Sound Level Meter & Real-Time Analyzer; S/N: 824A1850
Norsonic N 211R Tapping Machine; S/N: 688
Bruel & Kjaer type 4230 Acoustic Calibrator; S/N: 378197

Results:

The impact sound levels, receiving room absorption, and normalized impact sound level results were determined in accordance with the methods defined in ASTM E 1007. The impact sound levels, normalized impact sound levels, and uncertainty values for the 95% confidence limits are tabulated in Table 1 at the standard one-third octave band center frequencies.

The Field Impact Isolation Class (FIIC) was determined in accordance with ASTM E 989. Because the background sound levels were within 5 dB of the impact sound levels at certain frequencies, the normalized impact sound levels and the FIIC are reported as *minimum* values and the actual values may be greater.

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Table 1
Field Impact Sound Transmission

Freq. (Hz)	Impact SPL (dB)	Normalized ISPL (dB)	IIC ref. contour	Deficiencies (dB)	Uncertainty 95% Conf. (dB)
50	49	48	-	-	2.1
63	52	53	-	-	5.4
80	49	54	-	-	3.1
100	56	55	55	0	1.1
125	57	58	55	3	3.1
160	58	61	55	6	2.1
200	60	61	55	6	2.2
250	62	63	55	8	3.0
315	59	62	55	7	2.3
400	54	55	54	1	3.5
500	50	52	53	0	1.9
630	45*	46	52	0	2.3
800	44*	45	51	0	1.4
1000	44*	45	50	0	1.1
1250	45*	45	47	0	1.4
1600	42*	42	44	0	1.1
2000	37*	38	41	0	1.2
2500	33*	34	38	0	1.6
3150	30*	31	35	0	1.2
4000	28*	28	-	-	1.3
5000	27*	28	-	-	1.7

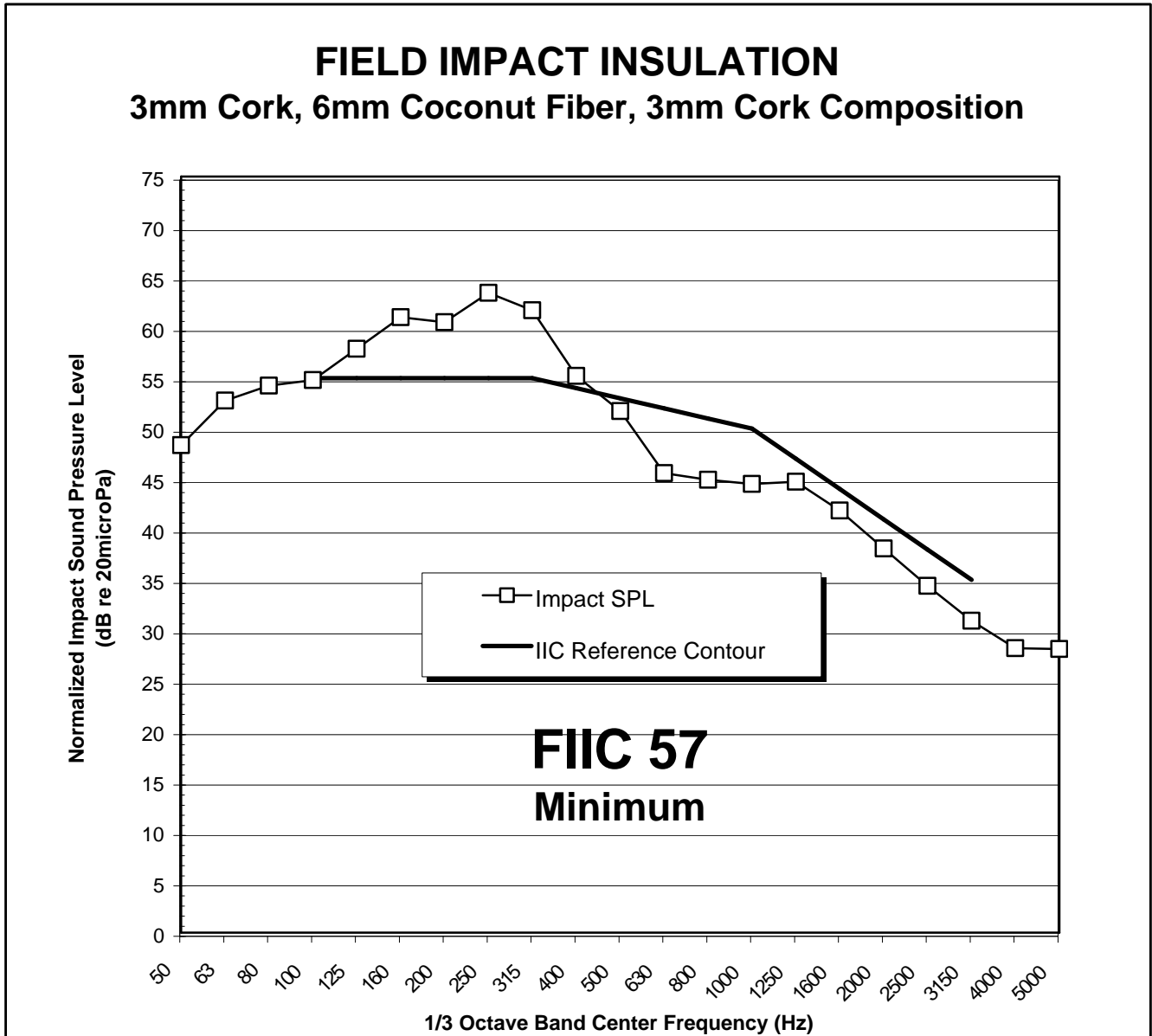
Total Deficiencies: 31

FIIC: 57 Minimum

* Ambient levels within 5 dB of source levels in receiving room

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