

TEST SPECIMEN: Two layers of 6mm Cork 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 1501 & 1401

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 two layers of 6mm cork underlayment 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 cork layers were loose laid and cross-lapped at 90 degrees. 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 and receiving rooms were both finished and unfurnished. The interior volume of the receiving space was approximately 2,842 ft³

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(80.5 m³) and was located on the 14th floor of a 17 story building. All doors and windows were closed during the measurements.

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	50*	49	-	-	
63	55*	58	-	-	
80	50	49	-	-	
100	54	54	56	0	
125	61	64	56	8	
160	59	62	56	6	
200	59	59	56	3	
250	63	60	56	4	
315	63	61	56	5	
400	61	59	55	4	
500	57	53	54	0	
630	53	49	53	0	
800	55	51	52	0	
1000	51	47	51	0	
1250	46*	42	48	0	
1600	41*	38	45	0	
2000	36*	34	42	0	
2500	32*	29	39	0	
3150	28*	25	36	0	
4000	26*	24	-	-	
5000	25*	23	-	-	

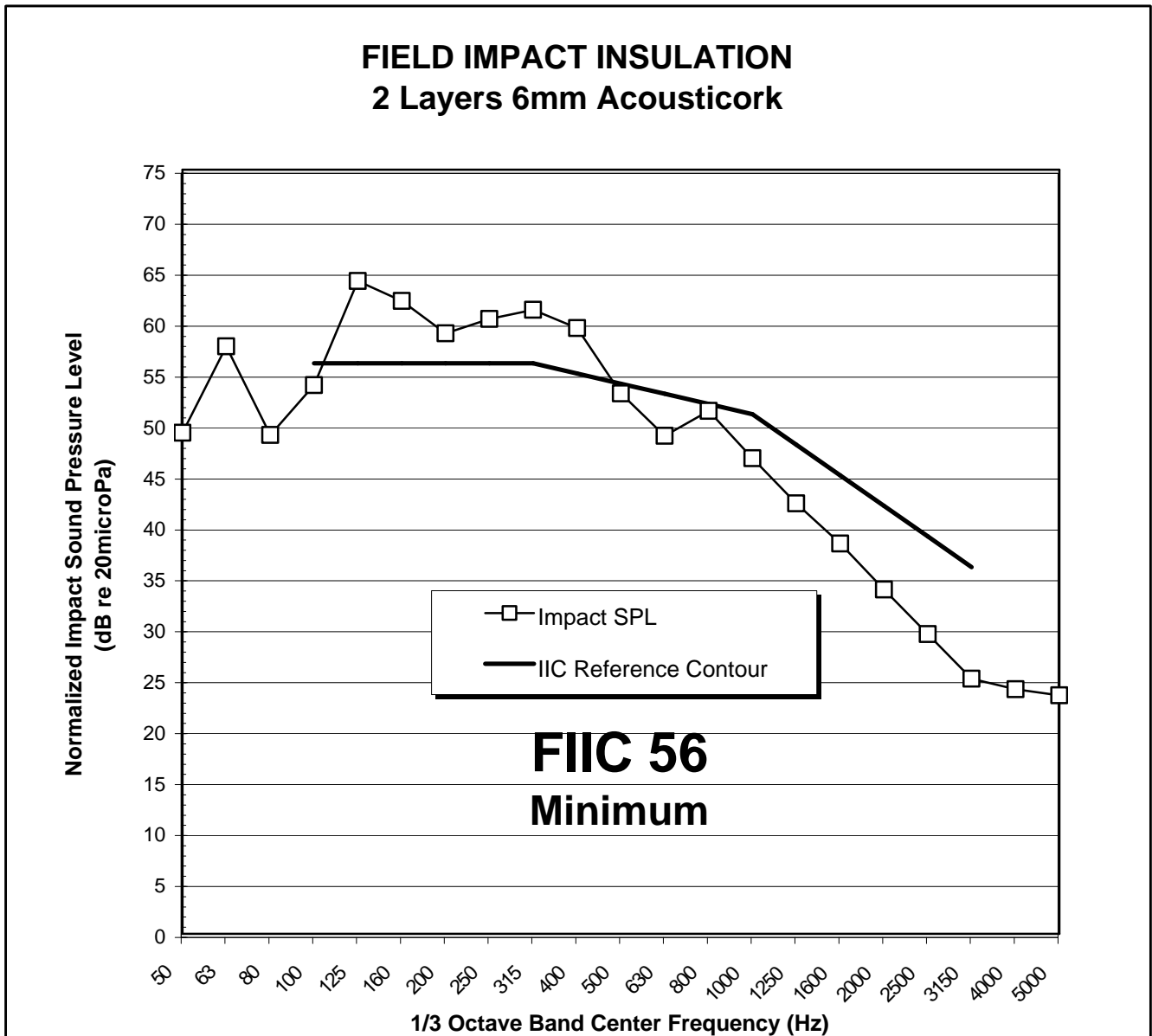
Total Deficiencies: 31

FIIC: 56 Minimum

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

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