

OCTAVE

acoustique

**IMPACT SOUND INSULATION
FOR DIFFERENT SAMPLES
ON 8 INCHES CONCRETE SLAB**

LES SOUS-TAPIS

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IMPACT SOUND INSULATION
45, LAKESHORE POINTE-CLAIRE (QUÉBEC)

by

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IMPACT SOUND INSULATION
45, LAKESHORE POINTE-CLAIRE (QUÉBEC)

A mandate was given to *Octave acoustique inc.* by *Les sous-tapis Dura undercushions Ltd/Itée* to assess the impact sound insulation of different samples on a floor/ceiling assembly.

All tests were made with a Real Time 1/3 Octave Digital Frequency Analyzer *Larson Davis* Model 2800B with an Acoustical Calibrator CAL200. Airborne noise was generated with a *Beckemer* amplifier and speakers. Impact noise was generated with a *Brüel & Kjær* type 3207 Tapping Machine. All instruments comply with the ASTM and ISO recommendations.

We performed the tests on June 16, 2010 in the building at 45 Lakeshore in Pointe-Claire, Quebec, Canada. Two superimposed apartments were used to conduct all tests. The floor/ceiling assembly was between the small bedrooms of apartment PH2 and 621. The structure is a eight inches *concrete slab*. The background noise has been measured and included in the calculation.

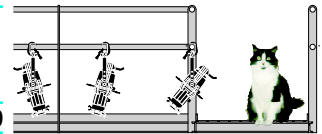
The exact composition of floor/ceiling assembly on which the tests were made are described in the following pages — as *Octave acoustique inc.* was not involved in the buildings' construction process, the composition is described from the client.

Transmission Class to impact sound was determined to conform with the ASTM E1007 recommendations "*Standard Test Method for Field Measurement of Tapping Machine Through Floor Ceiling Assemblies and Associated Support Structure*" and the ASTM E989 for reference curves.

There is no requirement for the impact insulation. However, the CMHC recommend IIC 65 for a soft flooring (carpet) and IIC 55 for hard flooring (wood, ceramic, linoleum).

The FIIC decimal is indicated on the graph for comparison only. As for the standards, this figure must be truncated. In addition, the global level attained, in dB(A), represents the total perceived acoustical energy in the receptive room. It can't be utilized to assess a partition. It is indicated as information purpose only.

All the results are presented in a list. The first figure represents the final result as per the ASTM standard, already truncated (yellow). Only this figure is important. However, because the standard is constantly questioned, the global energy, in dB(A), is also indicated. This value represents the rough insulation (FSTC) or the perceived noise (FIIC). In both cases where two partitions show the same FSTC or FIIC result, this value becomes important. In the selection of the class, the sum of differences $\sum\Delta$ (between 16 and 32), the number of band frequencies where we note a difference $n\Delta$ and the maximum difference Δ_{\max} (no more than 8) are critical values. In red is the criterion where the limit is reached and what determine the FSTC or FIIC class.

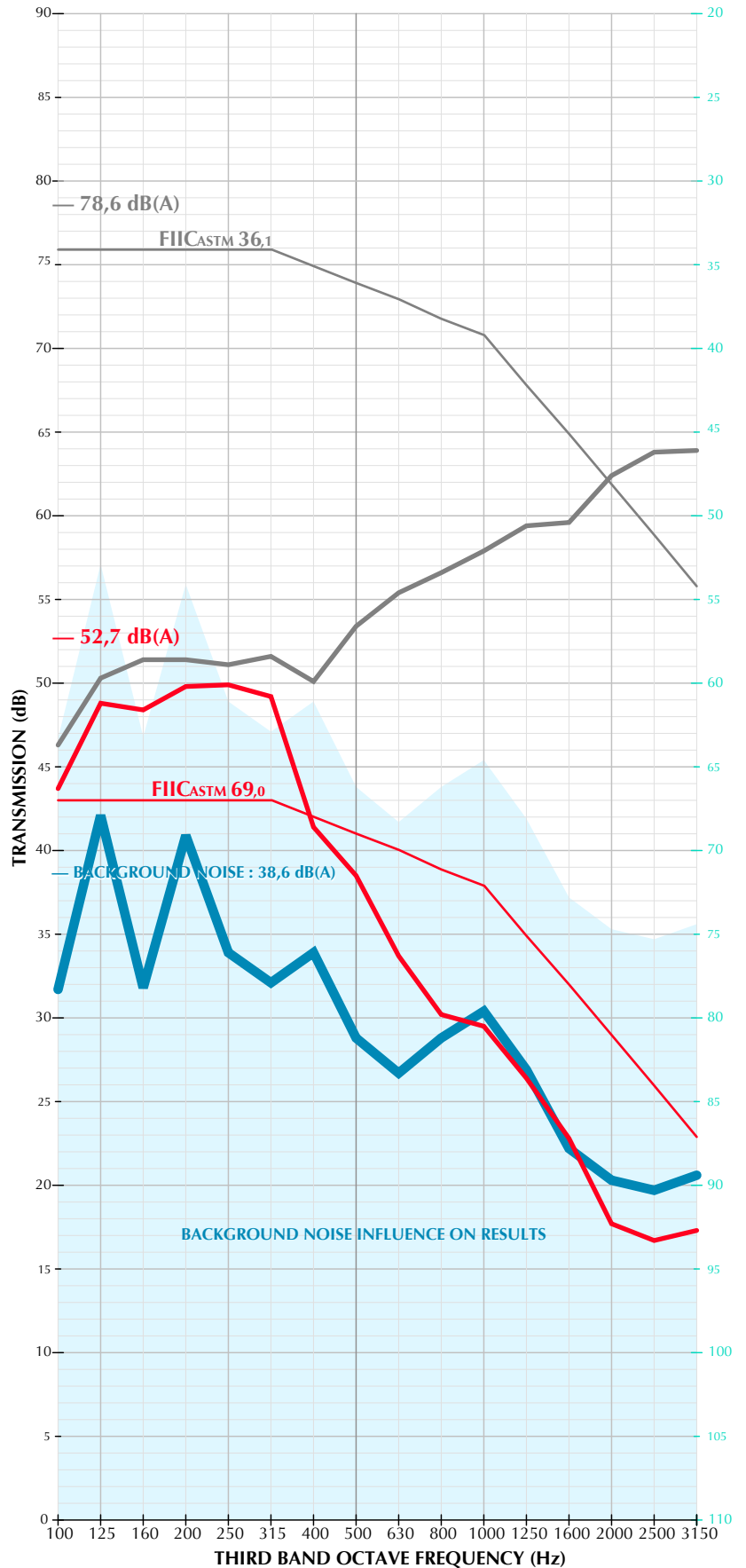
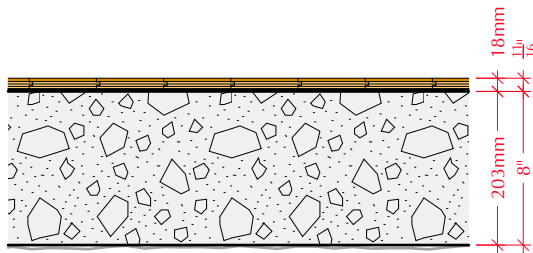


IMPACT INSULATION

MEASUREMENTS CONDITIONS [PH2]:

Small bedroom/office
With furniture
Painted walls
Floor in bare concrete
Door closed
Volume = 1208 cu.ft./34,2 m
Floor surface = 136 sq.ft./12,7 m²

ASTM E 1007-97 — Standard Test Method for Field Measurement of Tapping Machine Impact Sound Transmission Through Floor-Ceiling Assemblies and Associated Support Structures
ASTM E 989-89 (Reapproved 1994) — Standard Classification for Determination of Impact Insulation Class (IIC)



**Oak Engineered Hardwood Floor 14 mm
Dura-son 3,5 mm**

FII _{CASTM}	dB(A)	$\sum \Delta$	n Δ	Δ_{max}
69	52,7	31,8	6	6,9

Concrete slab

FII _{CASTM}	dB(A)	$\sum \Delta$	n Δ	Δ_{max}
36	78,6	13,3	3	8,0

MEASUREMENTS CONDITIONS [621]:

Small bedroom/office
With furniture
Painted walls
Floor in bare concrete
Door closed
Volume = 1208 cu.ft./34,2 m
Ceiling surface = 136 sq.ft./12,7 m²

Test completed in 45 Lakeshore in Pointe-Claire (Quebec)