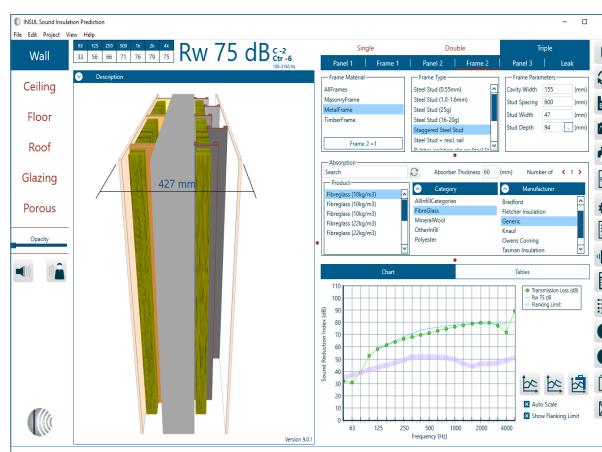
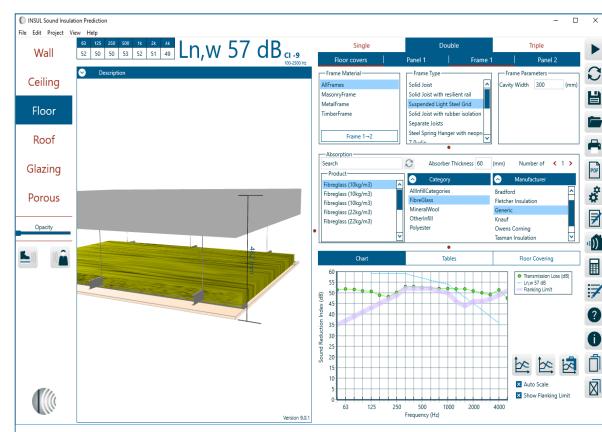




# INSUL

## SOUND INSULATION PREDICTION SOFTWARE



**INSUL is a program for predicting the sound insulation and impact sound of wall, floors, ceilings, roofs and windows**

INSUL uses robust theoretical models that are quick to calculate and only require easily obtainable construction information. The program can make good estimates of the Transmission Loss (TL), Weighted Sound Reduction Index ( $R_w$  or STC), Impact Sound Insulation ( $L_{n,w}$  or IIC) and rain noise.

INSUL is useful for example, to investigate new materials that do not yet have test data available. By entering simple measurable parameters into the custom materials database, the sound insulation of different constructions can be estimated. Or INSUL can be used to investigate different permutations of known materials used in constructions that do not have laboratory test data available.

INSUL has a database of more than 250 materials that can be filtered to show only your country or regions list. You can choose combinations of materials, and join them together by different sorts of frames. Like any prediction tool, INSUL is not a substitute for measurement. However, extensive comparisons with test data indicate INSUL generally predicts  $R_w$ /STC values to within 3 dB for most constructions, and IIC/ $L_{n,w}$  values to within 5 dB.

### Capabilities

- Predicts airborne sound insulation performance of single, double and triple panel walls, floors, roofs, ceilings and windows in 1/3 octave bands from 50 - 5000 Hz.
- Predicts impact sound insulation of floors including the effects of different floor coverings. INSUL can also predict lightweight and timber floors.
- Predicts noise of rainfall on roofs, both natural rainfall and laboratory rainfall (ISO 140-18).
- Calculates indoor sound levels from outdoor noise sources (EN 12354/3)

### INSUL features

- Database of thousands of common builders work materials and floor coverings
- Users can add their own materials to the database
- English, French, German, Spanish, Swedish, Chinese and Polish languages and materials database available
- Calculation range 50-5000 Hz
- Imperial or metric units
- Composite Transmission Loss calculator
- Leakage calculation
- Outdoor to indoor calculator
- Auralisation of source and receive levels
- Stand-alone or network licence available
- Windows or Mac OS

INSUL has been developed by Marshall Day Acoustics to automate the repetitive calculations associated with the prediction of the sound insulation of those constructions commonly encountered in Building Acoustics. Over 2,000 licences have been sold in over 80 countries over the last 10 years. It is used by consultants, builders, material and component manufacturers and universities.

Marshall Day Acoustics is an independent acoustical consulting firm. The firm is located in New Zealand, Australia, China and France.

(region 1)

[www.insul.co.nz](http://www.insul.co.nz)

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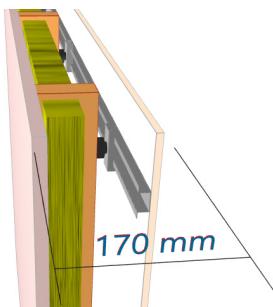
MARSHALL DAY  
Acoustics

One third octave band centre frequency (Hz)



# INSUL

## NEW FEATURES IN VERSION 9.0

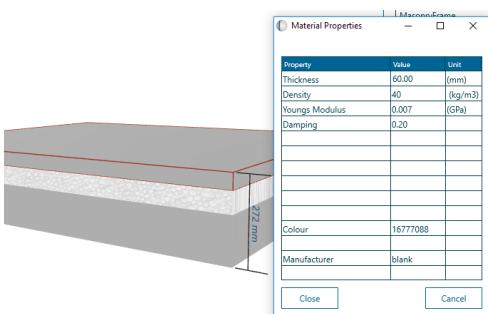


### NEW USER INTERFACE

A new interface has been developed that will improve useability and allow greater expansions in the future. The 3-D illustration can be rotated, zoomed, and sections made transparent to better visualise the construction.

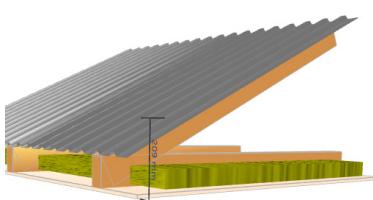
There are better filtering and search tools that can be used to make material selection quicker and easier. There is a user editable database of timber and steel studs for quicker and easier design.

### FLOATING FLOORS, WARM ROOFS, INSULATED BUILDING WRAP



The airborne and impact performance of floating floors can now be predicted when using polystyrene, PIR, or mineral or glass fibre insulating layers. The airborne performance of warm roofs using PIR insulation under a bituminous or metal skin can be predicted. Finally the airborne performance of exterior walls that use polystyrene as building wrap or exterior foam sheathing can be predicted.

As the thermal insulation performance of buildings is increased and different methods of providing high values of thermal insulation are applied, traditional acoustic knowledge has become out-dated. The use of non-porous insulation, while beneficial for thermal properties, can have a significant effect on acoustic performance, sometimes reducing acoustic performance. The new features of INSUL allow a much wider range of thermal insulation elements to be used.



### PITCHED ROOFS

The performance of traditional pitched roofs can be predicted. This is a very useful feature for calculating the sound transmission into houses as there is very little laboratory test data on this form of construction, yet it is a very common house construction, for instance, near airports.

### MISCELLANEOUS

There are many small improvements such as the predicted thermal insulation of windows, the sound insulation of double glazing using argon gas between the panes. There are a number of new frame connections to allow prediction of a wider range of constructions. Double absorptive blankets can be used in cavities for more accurate illustrations. There is improved integration between INSUL features, such as being able to transfer results from the composite transmission loss calculator to the outdoor to indoor calculator.