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TECHNICAL BRIEF

Acoustic Rating Systems – An Understanding of the Similarities and Differences between the Systems

As the population has expanded, construction trends have shifted towards higher density housing and commercial constructions. In order to satisfy the expectations of the occupants the acoustic performance of the construction and its openings requires careful consideration. The following section has been designed to provide a general understanding of both the common rating systems encountered.

Acoustic ratings are designed to provide an indication of the resistance that a material or design has to the passage of sound through it. There are numerous methods of calculating the sound transmission through materials. The most commonly used Acoustic rating methods are: Rw, STC and OITC. Each of these systems converts the performance of the element to a single number for ease of comparison and calculation.

Each of these rating systems are similar, in that *measured* data of the sound transmittance through the material or construction, forms the basis of each system. The results of the measurements are then mathematically treated to evaluate the rating of the product or construction.

The difference between the systems lies in the mathematical procedures used, the manner in which the measurements are performed, the frequency ranges and bands over which the initial measurements are performed.

Weighted Sound Reduction Index (Rw)

Current Australian and ISO Standard, AS/NZS 1276.1 1999 & ISO 717 1996. Designed to estimate the acoustic performance of a material or construction for certain common sound insulation problems. It contains two sound adaption terms (C_t and C_{tr}) so that the Rw value can be modified to reflect the environmental conditions to which the element or construction will be subjected. The C_t or C_{tr} term is added to the calculated Rw value to provide an indication of the performance under the adjusted sound condition.

C_t "Pink Noise" Spectrum Adaption Term. It is used to adjust Rw to compensate for noise sources such as: high-speed traffic, children playing, noise from radios TV's, high speed railway traffic and from factories emitting medium and high frequency noise can be compensated for.

C_{tr} Traffic Noise Spectrum Adaption Term. It used to adjust Rw to compensate for noise sources such as: low speed urban road traffic (say 80km/hr), factories emitting low / medium noise and aircraft at close range.

Sound Transmission Class (STC)

Current American Standard ASTM E413 2004.

This standard was used as the Australian Standard till the release of AS/NZS 1276.1 1999. It was designed to provide an estimate of the acoustic performance of an interior wall partition.

Outdoor Indoor Transmission Class (OITC)

Current American Standard ASTM E1332-90 (2003).

This standard was designed to more accurately represent the performance of a wall partition to an external noise source (transportation, aircraft take off & railroad noises etc).

G.James has at considerable expense had the majority of its more common glazing constructions (glass frame and seal combinations) independently tested for their acoustic resistance to Australian Standard AS/NZS 1276.1 1999 (Rw system). More information