

NRC – NOISE REDUCTION COEFFICIENT

Quick Explanation

NRC is a single number metric that is intended to indicate the absorptivity of a material. NRC's could theoretically range from 0 – 1.0. Practically speaking, they usually are in the range from 0.5 – 1.0. A higher number generally indicates a material with more absorptivity than a lower number. NRC is the arithmetic average of the measured sound absorption coefficients in the 250, 500, 1000 and 2000 octave bands.

It is important to remember that this metric gives only a general idea of the absorptivity of a material. For more detailed analysis, octave band sound absorption coefficients should be used.

More Than You Wanted to Know

Sound Absorption Coefficient is the ratio of the sound energy absorbed to the sound energy incident on a material, i.e. the fraction of sound which is not reflected.

NRC's are generally used to characterize commercially available acoustically absorptive

materials such as ACT or wall panels. NRCs are laboratory measured and are not commonly used to characterize common construction materials such as concrete block, gypsum board, wood panels, etc.

NRC describes acoustical absorptivity, but does not describe the sound isolation value of any given material. NRC and STC/CAC values correlate only very loosely. For example, for a particular ACT, the higher the NRC, usually (but not always) the lower the CAC will be.

Caveats

Because the NRC is an average of a set of performance data it can be misleading. Materials with similar NRCs may have very different sound absorption characteristics depending on the frequency. Therefore acoustical materials need to be chosen based on the target frequency for acoustical control, not solely based on their NRC value. The following graph shows two different acoustical tiles with identical NRCs 0.74, but very different absorption coefficients

