

ACOUSTICAL PRODUCTS AND PERFORMANCE

Metal ceilings are generally excellent in the area of meeting architects and owners acoustic requirements. Their acoustical performance is naturally dependant on the perforations or lack thereof (see Perforations) and the acoustic material behind those perforations

NRC (Noise Reduction Coefficient) To obtain a high NRC requires adequate perforations and adequate absorbing material behind the perforation to capture the sound energy and convert it into heat energy. Once a perforation has achieved about 12% open area then it captures most of the normal sound that is required to effect maximum reduction. The material that is used to capture the sound is one of two:

Fiberglass: Steel Ceilings Inc normally offers 1 pcf (pound per cubic foot) density material either in 1" thick to achieve about 0.70/0.75 NRC or 2" thick to achieve 0.95 NRC. The fiberglass is encapsulated in a very thin fire retardant black plastic to minimize any loose fibers. The benefit of this system is its cost and ability to reach high NRC levels. Where low frequencies need to be captured e.g. 250 HZ, then special designed fiberglass e.g. 6" thick can be used

Non woven fiber: As an alternate, Steel Ceilings offer a thin non-woven fiber which is laminated onto the back of the panel, and gives an NRC of about 0.65/0.75. The benefit of this is that the product is an integral part of the panel and it is more difficult for maintenance and other personnel to separate the panel and its sound absorbing element.

Wire pad spacers are also available to create a space between back of the panel and the encapsulated fiberglass. This can be installed for ease of future painting, if necessary.

CAC (Ceiling Attenuation Class) or STC (Sound Transmission Class): To achieve levels of up to 40 dB panels can either be non perforated or can have a metal backer plate above the fiberglass.

Background Notes:

Hertz. Normal frequencies for human ears are usually 250Hz to 4000 Hz, with most office sounds being in the 500Hz to 2000 Hz area. Low frequencies have long waves and high frequencies have short waves

Decibels (dB). This is a measure of sound intensity. It is measured on a logarithmic scale.