Sound Advice

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USE AND MISUSE OF ACOUSTICAL VINYL

By Noral D. Stewart

A solid vinyl material about 1/8 inch thick and weighing about one pound per square foot is commonly used for enclosures or barriers in industrial applications, to wrap ducts in HVAC systems, or to create a barrier above a ceiling when the wall ends at or just above the ceiling. Some variations in weight are available, and the material is often combined with a quilted fiberglass absorber for industrial applications. This material was introduced as a replacement for sheet lead and behaves comparably to sheet lead of similar weight per square foot. It has some good effective uses.

A concern has arisen that this material is being marketed by some sellers for applications where less expensive alternatives are available. In particular, vinyl is not typically required for use in architectural walls. The advantages offered by the vinyl can be obtained in such walls by using layers of gypsum of varying thicknesses which are much less expensive.

The primary advantage of they vinyl or lead is that it is flexible. This flexibility causes the critical frequency where the material is weak to occur at a very high frequency where it is not a problem. A typical gypsum wall will have a weakness at a critical frequency dependent upon the thickness of the gypsum layers used. A layer of vinyl or lead included in the wall but not glued to the surface will introduce some improved blockage at this frequency. However, the vinyl or lead typically adds only a pound per square foot to a wall that already weighs several pounds per square foot. Thus, it does not help significantly at other frequencies. If the lead or vinyl is glued to a more rigid layer of material, most of the benefit is lost. The improvement at the critical frequency can be obtained instead by adding for instance a layer of ¼ or 3/8 inch gypsum to walls that otherwise have half-inch or 5/8 inch layers of gypsum. The gypsum is less expensive.

An additional advantage of the gypsum in some cases could be to seal cracks or leaks in a wall. However, this is often done less expensively by other methods.