



NATIONAL FIBER
CEL-PAK INSULATION

Professional Cellulose for Cellulose Professionals

Sizing Heating and Cooling Systems in Buildings Insulated with Cellulose

Most heating systems installed in homes insulated with cellulose insulation are grossly oversized (typically 3 to 4 times larger than necessary) in relation to the actual heat loss and gains for these buildings. Unfortunately, this results in heating and cooling equipment that is more expensive than necessary. For cooling systems, oversized distribution and short cycling of the equipment result in operation below rated efficiencies and less dehumidification in the summer time. When it comes to the proper sizing of an HVAC system, more is not better.

One reason for oversizing equipment is that the heating and cooling industry has little faith in, or control over, the building envelope in which the equipment is going to be installed. This isn't surprising, since the majority of today's construction suffers from leaky building envelopes, allowing excessive air leakage, and poor installed performance of their conventional insulation systems. As a result of this all too common experience, the default values being plugged into HVAC equipment sizing software for insulation are very low, and the values for building leakage rates are very high.

Our Cel-Pak and NuWool contractors understand building performance and will ensure that the building envelope is tight and that the insulation performs up to its rated R-Value. When National Fiber's NuWool insulation is used in new construction, we offer heating and cooling guarantees for both residential and multifamily buildings.

In order to achieve the correct sizing for buildings insulated with cellulose insulation, you'll need to provide the following information to your heating/cooling contractor. For all insulation, use the actual insulating values, or R-Values. For example: R-13 for a 2x4 wall and R-20 for a 2x6 wall. For unvented cathedral ceilings or overhangs, use R-35 for a 2x10 cavity and R-42 for a 2x12 cavity. Loose fill, flat attic insulation should be calculated at R-3.8 multiplied by the depth of the insulation in inches.

For building tightness, use 5 ACH (Air Changes per Hour) @ 50 Pascals or 0.35 ACH Nat. (Natural air changes per hour). Many of our contractors are able to achieve leakage rates much less than these.

National Fiber stands behind its superior cellulose insulation and the expertise of our independent installers, and we guarantee the performance of the thermal envelope. Cellulose insulation is the safest, best performing and most environmentally positive insulation that you can use.

For further information, please contact our Technical Manager, Bill Hulstrunk, at technical@nationalfiber.com