



## NATIONAL FIBER CEL-PAK INSULATION

Professional Cellulose for Cellulose Professionals

### **The Use of Cellulose Insulation in Below Grade Areas and Basements**

Basements and below grade insulation systems offer their own sets of challenges and rewards to the builder or homeowner. Without insulation, these areas are not only a significant source of heat loss, due to low ground temperatures in the Northeast, but they are also a common source of moisture and odor problems as moist air condenses on their cooler surfaces. When cellulose insulation is installed, its high density blocks the flow of air and its high R-value warms the surface that it's in contact with, preventing condensation and odor. Cellulose insulation is also hygroscopic, allowing it to transport moisture and redistribute it from areas of higher to lower concentrations.

The key to successfully insulating below grade areas is to understand the moisture loads and flows in these areas. High moisture levels in the ground or the fill material surrounding below grade areas prohibit them from drying outward. Therefore, basement insulation systems must be installed so that they're able to dry to the inside, which means a vapor barrier should not be installed behind the interior finish.

Proper rain and ground water management are also critical to the performance of below grade insulation systems. Exterior grading, drainage, capillary breaks, exterior waterproofing, and insulation systems all help buildings cope with below grade moisture.

Cellulose insulation should not be installed in basements that experience seasonal flooding or those with signs of past water flooding unless drainage measures have been taken to correct these problems.

If cracking of the foundation wall over time is anticipated, than the application of 3/8 inch "fanfold" extruded polystyrene directly against the foundation wall is recommended. For irregular below grade surfaces, the installation of "Tu-Tuff" or comparable reinforced poly sheathing against the foundation wall, air sealed around the edges, is advised. In both these applications, a 2 x 4 wall can be built in front of the foundation wall so that the cellulose can flow behind the 2 x 4 studs and reduce the thermal bridging from the framed wall.

National Fiber approves the use of our spray applied NuWool cellulose insulation and both our NuWool and Cel Pak in dry, dense pack applications in below grade and basement areas, without interior vapor barriers, that meet current code requirements for drainage, exterior waterproofing and foundation insulation systems. Thousands of below grade areas and basements across the country have been successfully insulated with cellulose insulation, resulting in improved building performance and comfort.

If you have any questions or would like to discuss this further, please contact our Technical Manager, Bill Hulstrunk at [technical@nationalfiber.com](mailto:technical@nationalfiber.com).