

## **Nexcem ICF vs Polystyrene ICF**

### ***ENVIRONMENTAL CONSIDERATIONS***

- Nexcem Wall Forms contain no polystyrene, foams or plastics. There are no VOCs or offgasing with Nexcem.
- There are no CFC or HCFC released during the Nexcem manufacturing process. Most blowing agents that are used in the polystyrene manufacturing and processing operation contain CFC or HCFC, both of which contribute to the destruction of the Ozone layer. Nexcem is comprised of simple ingredients; cement and wood aggregate. Nothing in the Nexcem process is remotely hazardous or detrimental to the environment.
- 100% recycled wood content. We only use recycled waste wood (100% clean, natural softwood lumber) that is taken from sources such as truss manufacturing operations, and otherwise being sent to landfill sites.

### ***PERFORMANCE CONSIDERATIONS***

- Nexcem does not burn or melt. This is not the case with styrofoam and other ICF products. The smallest Nexcem wall has a 4 hour fire rating, zero flame spread, smoke spread of 11 and no black toxic fumes created in the event of a fire.
- More energy efficient. The thermal mass/dynamic effects are better with Nexcem than other ICF systems because with Nexcem, the insulation is placed primarily on the exterior of the concrete mass. Polystyrene ICF systems put 50% of the total insulation on the interior, which actually prevents the transfer of heat/energy between the concrete mass and the interior conditioned space. With Nexcem, all insulation inserts are positioned towards the exterior, where it should be, to maximize any thermal mass gains.
- Improved indoor Air Quality. The Nexcem material is a hygroscopic material - which means that it has a very large capacity to store and release moisture as required, depending on the environmental conditions. This storage capacity refers to storing moisture in the form of water vapour and increased material moisture content – not liquid water. Also, the Nexcem material and wall system is extremely vapour permeable. It does not act as a vapour barrier, but acts as a vapour regulator. Consequently, the Nexcem acts as a moderator for vapour and RH (Relative Humidity) levels. We have conducted full scale wall tests and found that not only did the walls not create any condensation problems without a vapour barrier, but RH levels above RH 65-70 were not possible.
- Promotes healthy indoor environment and inhibits mold growth. Firstly, because the material is hygroscopic and vapour permeable, RH levels are kept low enough such that it is not possible to reach the level of RH where mold can start to grow (typically 70% RH). Combined with the high pH (alkaline) environment resulting from the cement content, this means that the wall system actually helps to inhibit mold growth. Something that doesn't happen with the other systems.
- More impact resistant. Both Stucco and Drywall, when attached to Nexcem result in a solid, durable, impact resistant finish. Polystyrene ICF substrates result in stucco and drywall finishes that can easily be damaged through regular use.
- Completely resistant to insects and rodents. Although polystyrene does not provide a food source for insects/rodents, it does provide easy access and has been known to be chewed/eaten by various types of insects/rodents. This is not the case with Nexcem
- Contains no brominated flame retardants. Developing information on these compounds are consistently resulting in more and more of these retardants becoming banned from use throughout the world. While

abundantly present in foams and polystyrene, Nexcem does not contain any chemical compounds other than cement and wood.

### **CONSTRUCTION CONSIDERATIONS**

- Nexcem Wall Forms are much stronger, and can withstand higher concrete pressures. We have zero blow-outs in the field when poured in accordance with our recommendations.
- The blocks require less bracing than the foam ICFs and Nexcem walls don't bow and bend as easily as the foam blocks. Also, since the blocks are uniform, it is possible to drywall or attach screws to any point on the finished surface, not just at the discrete plastic web locations
- Because the Nexcem is a free draining material, it is possible to use a high-slump concrete (7" – 9" slump) without adversely affecting your concrete strength. When pouring a very wet concrete mix, the Nexcem material immediately starts to drain the moisture so that it does not result in weaker concrete, while ensuring that there are no voids and making the pouring process easy.

### **COST CONSIDERATIONS**

- Nexcem Wall Forms are more expensive than Styrofoam but also uses less concrete. The net increase in cost to use Nexcem is typically about \$3.00 per Square foot of wall area
- Using a 50 x 40 footprint as an example, with 9ft walls and 15% window area, the increase in cost to use Nexcem will be approximately \$5000 per floor