



RASTRA vs. Foam Panel ICF

There are two basic types of Insulating Concrete Forms, better known as ICF systems. The first consists of two foam panels held together by plastic spacers to create an open center that forms a solid concrete core.

RASTRA is a Compound ICF made from a mix of recycled Styrofoam beads and Portland cement. In fact, RASTRA is the original Compound ICF and recognized as the market leader in this category.

Installation

Anyone who has previously installed a foam panel ICF product understands the challenges of using this material. Because of the inherent weakness of Styrofoam, an extreme amount of bracing is required to control blowouts and bowing from the weight of the concrete. Concrete pours are usually limited to 48" at a time to help control the problem. Because RASTRA is heavier - about 10 pounds psf. - and ten times as dense, it requires less bracing during construction. Reduced bracing and seam reinforcement means shorter construction cycles. Due to the size of the RASTRA panels, walls go up very fast.

RASTRA accepts plaster, drywall, Portland stuccos, and acrylic finishes applied directly to the panel, eliminating the need for membrane, wire mesh and vapor barriers. RASTRA walls can be shaped, rasped, drilled, and cut into shapes easier than wood, something never possible with other ICF systems.

Perhaps the greatest cost-saving benefit from building with RASTRA versus foam panel ICFs is the amount time saved. A study was conducted by the Insulating Concrete Forms Association comparing the labor hours needed to construct an 1,100 square foot home. The findings in this study showed that a home built using a foam panel system took 96 hours to construct while a home using RASTRA required only 68 hours. This difference of almost 30 hours is quite substantial and would certainly be much greater if building an average 3,300 square foot home. RASTRA provides builders with an easier and faster way to build.

Recycled Content

Foam panel ICFs are manufactured from virgin polystyrene while Compound ICFs use only recycled material. A RASTRA panel is 85% recycled EPS by volume. Thousands of gallons of fuel, energy and labor are saved annually by reducing operation of landfill equipment. Styrofoam is non-biodegradable consuming 6-10% of our landfill space.

Compounds may be the best option for minimizing the environmental impact of construction. If LEED certification is important to the builder or owner, they will receive extra LEED points for using compound blocks. Compound ICF was used in the first Gold-Level LEED building in Texas.

There are other environmental savings as well, such as using less petroleum to make virgin EPS beads, and less cement, which is a notoriously energy-intensive process.

Compounds use an average 30% less concrete than a comparable wall made from foam panel ICFs. Cement production uses an extreme amount of energy and produces a lot of CO₂. By decreasing the amount of cement required, CO₂ emissions are also decreased by a significant amount.

Compound ICF walls are impervious to mold, termites, and other pests without any type of pesticide or special treatment that may leach into the soil. Foam panel systems provide insects with a perfect place to tunnel and nest. For this reason some areas of the country do not allow foam panel systems to be used below grade.

Fire Rating

Foam panel ICFs must be covered with drywall to meet fire code. RASTRA does not require drywall or additives to satisfy fire codes and has achieved a 4-hour fire rating without covering. Unlike foam panels RASTRA doesn't melt, smoke or produce airborne toxins.

Independent lab testing put RASTRA product to the test by subjecting a full scale wall with no coatings of any type to a constant 2000°F flame. After four hours of continuous burning, the opposite side surface rose only 7° F with no ignition, flame spread of zero and smoke density of less than 5 (450 is permissible).

Climate Control

To create a healthy and comfortable room climate, walls should work in harmony with the HVAC unit to control humidity. A major problem of the foam panel ICF is damp air and mold. To remedy this problem some builders installed additional air exchangers in foam panel ICF houses, which may reduce condensation, but do not improve the room climate. RASTRA has a vapor diffusion factor of 7.3, a perfect breathing wall, allowing a micro moisture exchange. In blower door tests, a RASTRA built home tested at 0.0379 air changes per hour, or once every 26 hours.

One of the most important differences between RASTRA and a foam panel ICF is the ability to utilize the wall's Thermal Mass. Thermal mass is a property that enables building materials to absorb, store, and later release heat. Buildings constructed with mass walls of concrete have a unique energy-saving advantage over framed walls.

However, because foam panel systems install half of the insulation between the wall's core where energy is stored and the interior, this benefit is greatly reduced. RASTRA does not use solid foam panels and as a result allows for much greater use of the stored energy. This lowers energy costs and creates a more consistent climate.

Reducing the concrete in the wall translates to better insulating properties. Using 2/3 the concrete puts 1/3 more insulation in the wall. When completed, the wall performs even better; its substantial thermal mass dampens temperature swings better than foam panel systems.

RASTRA Advantages over Foam Panel ICFs

- ⌘ Superior Thermal Performance
- ⌘ Lower Installed Cost
- ⌘ Uses an average 30% less concrete
- ⌘ Much improved air exchange rate & climate control
- ⌘ Can be used below grade
- ⌘ Curved walls and arched openings fast and easy
- ⌘ 4-hour fire rating without drywall covering
- ⌘ Accepts plaster and stucco directly
- ⌘ Uses 100% recycled EPS – more LEED points
- ⌘ Denser panels hold screws and nails
- ⌘ Easier to install interior trim
- ⌘ Able to pour full height wall in single pour
- ⌘ Far less bracing required – saves time – truer walls
- ⌘ Stronger panel results in far fewer blowouts
- ⌘ Cut and shaped with common woodworking tools
- ⌘ Faster installation
- ⌘ Impervious to insects



Architectural details are easy with RASTRA