



## RASTRA vs. Foam Panel ICF

The green building movement, already a huge factor in the commercial sector, is likely to transform residential construction as well. One pundit claims it will transform building in the same way electric lights and air conditioning did last century.

Insulating Concrete Forms (ICFs) are well-positioned to take advantage of this trend; they're durable, energy-efficient, and widely available. Among the various types of ICFs on the market, the most environmentally friendly are the Compound ICFs, panels made from a mix of recycled expanded polystyrene (EPS) and Portland cement.

**RASTRA is recognized as the market leader** in this category.

### Installation

Anyone who has previously installed a foam panel ICF product understands the challenges associated with building with this material. Because of the inherent weakness of the material, 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 a foam panel ICF system 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

Compound ICFs use a huge amount of recycled EPS that is usually destined for the landfill. Thousands of gallons of fuel, energy and labor are saved annually by reducing operation of landfill equipment. Consider also that EPS is a non-biodegradable product, which saves space at landfills as well. Foam panel ICFs require the production of new polystyrene while RASTRA uses polystyrene waste.

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 CO<sub>2</sub>. By decreasing the amount of cement required, CO<sub>2</sub> 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.

When researched by people who are looking for the best, most insulated structure they can build, people find compound ICFs to be the greenest, most sustainable solution available and still has a very high insulation value.

## 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 average 30% less concrete
- ⚡ Much improved air exchange rate & climate control
- ⚡ Can be used below grade
- ⚡ Curved walls and arched openings fast and easy
- ⚡ Meets fire code without drywall covering
- ⚡ Accepts plaster and stucco directly
- ⚡ Uses 100% recycled EPS – more LEED points
- ⚡ Dense 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 standard woodworking tools
- ⚡ Faster installation
- ⚡ Impervious to insects



Architectural details are easy with RASTRA