



RASTRA ICCF vs. Foam Panel ICF

Insulating Concrete Forms (ICFs) traditionally are made of expanded polystyrene (EPS). Also RASTRA started out this way in the late 1960s. However some disadvantages became obvious and very soon RASTRA was looking for solutions. This led to a new material which later was called Compound or Composite ICF's and ICF turned into ICCF. The **Compound ICCFs** (ICCF) are the most environmentally friendly insulated concrete forms. RASTRA Compound ICF panels are made from a mix of recycled (or virgin) expanded polystyrene and Portland cement paste, thus avoiding many disadvantages known of other (foam) ICFs. RASTRA was the first to develop regular ICF's (the first basic patent (OE291.498) was filed in November 1965 in Austria) and **RASTRA is recognized as the inventor and market leader** in this ICCF 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 foam ICF 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" (120cm) at a time to help control the problem. RASTRA walls have been poured to 12ft (3.5m) lifts. Because RASTRA is much more stable and denser, it requires no bracing during construction. Due to the size of the RASTRA panels, walls go up very fast. Due to its integrity RASTRA can be preassembled in the plant and large wall sections can be shipped to the site and installed incredibly fast.

RASTRA does not need preparation before finishing. RASTRA accepts plaster, drywall, Portland stuccos, and acrylic finishes, even tiles and veneers applied directly to the panel, eliminating the need for bonder, membrane, wire mesh and vapor barriers and expensive stucco procedures. RASTRA walls can be shaped, rasped, drilled, and cut into shapes easier than wood, something never possible with other ICF systems.

Recycled Content

RASTRA Compound ICF uses 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 as much as is available. In RASTRA polystyrene is only used as an aggregate not a wall material in itself. Therefore RASTRA eliminates some of the less desired properties of EPS.

RASTRA Compound material uses an average 30% less concrete than a comparable wall made from foam panel ICFs without compromising strength. 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. Several tests confirmed that rodents and insects do not nest or attack the RASTRA material, although they do nest and remove regular EPS for nesting. Dangerous mold, like aspergillus niger, rhizopus nigricans ect. do not form, because RASTRA keeps humidity under control.

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 wall covering. Fire codes require the use of so called "modified" EPS for the production of foam ICF's. This modification is achieved by an additive which can contain HBCD (hexabromocyclododecane) as flame retardant, a chemical that is known as bioaccumulative toxicant which has been banned and added to dangerous substances by the European Union for its potential health hazards. RASTRA doesn't need to use modified EPS.

Independent lab testing put RASTRA product to the test by subjecting a full scale wall with no coatings of any type to a constant 2200°F (1200°C) flame. After five hours of continuous burning, the opposite side surface rose only 7° F (3°C) 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 or the outside climate to control humidity and diurnal temperature swings. 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 and regulation, due to the cellular, micro-porous structure of RASTRA.

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 – RASTRA qualifies as a thermal mass wall!

Although, foam panel ICF systems contain concrete this concrete cannot work as thermal mass. The insulation is between the wall's core where energy is stored and the interior, therefore this benefit is greatly reduced. RASTRA does not use solid foam and as a result allows for much greater use of the stored energy allowing it to time delay temperature swings in the most accurate way. This lowers energy costs and creates a more consistent climate.

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
- ⌘ Able to pour full height wall in single pour
- ⌘ No to little bracing required – saves time – truer walls
- ⌘ Stronger panel avoids blowouts
- ⌘ Cut and shaped with standard woodworking tools
- ⌘ Faster installation
- ⌘ Impervious to insects
- ⌘ Preassembling of wall segments in the factory to speed installation on site.

