



Why Build With RASTRA?

Everyone uses different criteria when choosing building materials. Some focus on the lowest initial cost while others want the highest quality product that performs over time. Reasons even vary depending on where you live. In the Midwest people may not be concerned about RASTRA's ability to withstand an earthquake, but very interested in its ability to reduce heating bills. Listed below are a few of the highlights of this unique building material to help you decide which features are important to you. As you go through this summary, rate each feature on a scale of 1-10. Share your results with your RASTRA sales representative. 1=no interest :: 5=moderate interest :: 10=important

Energy Savings

Buildings built over the past several decades were built with limited focus on saving energy largely because we enjoyed low oil prices. Homes were built with low insulating values to reduce construction costs. These are different times, and with energy prices increasing, improving insulating efficiency is now simply a good financial decision that pays dividends for the life of the property.

- :: Heating oil prices have risen 83% over the past year. At \$100 per barrel, oil has now reached triple the average price in 2000, and still climbing.
- :: This winter's average fuel bill is expected to top \$2,200, up from a record \$1,433 in 2007.
- :: Natural gas has risen 42% over the past two years - electricity has risen 17%.

RASTRA's superior thermal performance and air tightness greatly reduces heat transfer and lowers energy consumption. By increasing the property's Effective R-value with RASTRA, HVAC equipment operates less often, reducing energy costs and extending the service life of the HVAC unit. Because less moisture filled air penetrates the exterior walls, air conditioners don't work as hard to remove the humidity from the air.

Insulation is rated in terms of thermal resistance, or R-value. The higher the R-value, the greater the insulating value. Unfortunately, R-value is too often calculated by adding independent scores of built-up materials used such as OSB board and insulation, to represent the total R-value of the wall. This method does not account for breaks in the insulating envelope, such as studs, headers, corner details, electrical outlets and plumbing that allows air to penetrate. To arrive at a true R-value of your entire wall, you must account for how factors such as thermal mass, air tightness, and moisture tolerance contribute to the final result. Because air leakage accounts for 25% to 45% of the total heat loss in a typical home, traditional wood frame and fiberglass insulation methods leave gaps equal to an open window at all times.

A typical "advertised" R-value for new wood frame construction ranges from R-13 to R-19. A RASTRA wall provides a much higher **Effective R-value of up to R-46**. RASTRA virtually eliminates air leakage, creating more energy-efficient buildings that feel warmer in winter and cooler in summer. The combination of RASTRA's high R-value, ability to restrict air migration, and eliminating convective loops makes RASTRA a superior insulation solution.

The U.S. Department of Energy issued the following statement "The most common insulation, fiberglass, does not stop air leakage" (Technology Fact Sheet 10099-767, U.S. Department of Energy).

The importance of lowering my Energy Bills 1 – 10 _____

Strength

It's easy to believe that a building made of a steel reinforced concrete grid is stronger than one made of 2x4's. The impressive feature is just *how much* stronger. Independent testing has determined that walls built from RASTRA are up to **700% stronger** than wood frame walls. RASTRA's superior strength is highlighted in several benefit categories below.

The importance of increasing the Strength of my home 1 – 10 _____

Safety

One of the most important features of any home is its ability to protect human life and its contents. RASTRA walls provide an extremely safe and secure environment. Important safety features include. . .

- :: Highly fire resistant – 4 hour rated @2000°F; material will not ignite; does not produce airborne toxins.
- :: Effective against hurricane force winds.
- :: Effective barrier from wind-driven debris – tested up to 250 mph.
- :: Earthquake tested up to magnitude level 8 with no structural damage.
- :: Cleaner indoor air quality - removes mold & toxins from wood preservatives; healthy living environment.

The importance of increasing the overall Safety of my home 1 – 10 _____

Interior Comfort

Being in a RASTRA built home is a comfortable experience. This results from more consistency in room-to-room temperature, improved air quality, and a quieter space.

By restricting air leakage and improving the insulation properties of the exterior walls, air temperature is more consistent throughout the building. Cold spots and drafts become a thing of the past. Air quality is improved by eliminating many irritants which cause discomfort to the eyes, nose and throat.

In an independent survey, owners of 74 new ICF homes and 73 new wood frame homes were asked what they liked about their home. Over 80% of the ICF owners mentioned the great comfort, compared with 22% of wood frame owners.

The importance of improving the Interior Comfort of my home 1 – 10 _____

Fire Rating

RASTRA's superior 4-hour fire rating helps protect homeowners from the devastating loss caused by fire. When independent tests applied a constant 2000° F flame, to one side of RASTRA for five hours, the opposite side of the panel increased in temperature by only 7° F *with no ignition*. Flame Spread was measured at zero and Smoke Density was measured at 5 (450 is permissible). In fact, fumes created by burning wood were determined to be far more toxic. Tests also revealed that less than 1" of the wall material lost any strength. At 2" deep the polystyrene beads did not even reach the melting point.

The importance of protecting my home from Fire 1 – 10 _____

Quiet

Compared to a typical wood frame wall, 75% to 85% less sound passes through a RASTRA wall. Scientists describe loud speech on the opposite side of a RASTRA wall as, "a listener would strain to hear loud speech. It is virtually inaudible." RASTRA provides outstanding acoustical performance, keeping outside noise from penetrating the exterior wall. The increased mass and density of RASTRA provides a very effective sound barrier.

Interior walls built with RASTRA also reduce the movement of airborne sound from one room to another. Privacy is enhanced. Buildings insulated with RASTRA have a noticeable "quietness". This is especially important for apartments, condominiums, offices and hotels as well as delicate areas of the home.

Water pipes in walls, floors and ceilings can be noisy. Installing water pipes inside a RASTRA wall not only reduces noise generated by the pipes, but also reduces condensation on cold water pipes.

In an independent survey, owners of 74 new ICF homes and 73 new wood frame homes were asked what features they liked about their home. Over 60% of ICF homeowners mentioned the quietness, versus only 2% of the wood frame homeowners.

The importance of improving the Quietness of my home 1 – 10 _____

Environmentally Friendly

More homebuyers are demanding cleaner home environments, free from toxic gases that can come from the carpeting, plywood and adhesives specified in traditional home construction. People also want to save trees. According to the National Association of Home Builders, a typical 2,000 square foot home uses 16,000 board feet of lumber plus 6,000 square feet of wood panels. RASTRA greatly reduces consumption of our timber resources and reduces toxins caused by wood preservatives that circulate throughout the home.

RASTRA is produced from recycled expanded polystyrene (Styrofoam), which is then mixed with a cement binder. It is a truly "green" building material. By volume, RASTRA is made of 85% recycled polystyrene, which otherwise would have ended up in landfills, never to disintegrate.

With energy savings comes environmental benefits. Specifically, the reduction of fossil fuels burned to create energy. By reducing our energy consumption, we reduce combustion by-products that lead to smog and contribute to global warming. An averaged sized home built with RASTRA reduces energy consumption enough to eliminate 2-3 tons of carbon dioxide (CO₂) emissions from our atmosphere per year when compared to a similar wood frame home. Over the life of a 30-year mortgage, homes built with RASTRA eliminate 60-90 tons of CO₂ emissions.

The production of RASTRA can be classified as ecologically clean. No particles or fumes are set free during its production, and only a minimum amount of energy is required. Producing one RASTRA panel consumes less than 2kw/h of electricity, and no heat is involved in the production process.

All production waste is recycled and converted into new RASTRA product. In addition, remnants from the building site can also be returned to RASTRA and recycled.

The best measure of sustainability is increased service life. Products that last longer make the biggest impact on our solid landfills. RASTRA provides an almost limitless service life.

The importance of using Environmentally Friendly building materials 1 – 10 _____

Indoor Air Quality

Mold grows anywhere there is the right combination of moisture and organic material (wood) to serve as a food source. Certain molds can damage building structures by literally destroying wood building components through decay. This decay attracts insects that accelerate the degeneration process.

The key to controlling mold growth is to control moisture. A certain amount of moisture occurs naturally in the air within a building, but when moisture reaches excessive levels the likelihood of mold growth is increased. The most common sources of excessive moisture are air leaks. RASTRA is inert and does not promote mold growth. RASTRA eliminates the interior cavity where moisture can hide and restricts moisture from entering the interior. It also holds conditioned air longer and allows the air conditioner to work more effectively to control moisture.

The importance of improving my Indoor Air Quality 1 – 10 _____

Reduced Maintenance

Maintenance is reduced in several areas that save time and money. This money saving feature reduces your cost-of-ownership but is also a good selling feature when you sell your property.

Traditional wood frame construction is prone to decay caused by insects and moisture. As lumber ages, it twists and warps. In fact, stucco cracks are usually caused by unstable wood frame walls – this problem is virtually eliminated with RASTRA. Gaps develop that allows destructive moisture to gain access. Over time walls loosen and eventually weaken. RASTRA is dimensionally stable and provides a more watertight layer of protection.

RASTRA does not expand and contract like wood, so paint is less susceptible to cracking and the exterior requires repainting less often.

Eliminating 2 x 4's and plywood eliminates the opportunity for wood rot.

Because the interior air is more controlled in a RASTRA building, the HVAC unit doesn't have to work as hard or often. Fewer on-off 'cycles' reduce wear and tear on the HVAC unit and extend its useful service life.

The importance of reducing Maintenance Expense 1 – 10 _____

Cost-of-Ownership

Determining the true cost of any building material goes beyond the product's initial cost. We admit that RASTRA may cost slightly more than wood – *for now*. But as lumber prices continue to climb, this may not always be the case. Besides, RASTRA create savings in other areas such as downsizing the HVAC unit, tax credits, eliminating membrane and wire mesh on stucco installations and eliminating the need for vapor barriers.

Heating and cooling costs are reduced by at least 40% each and every year. Maintenance costs are reduced because timber that changes dimension and rots is replaced by RASTRA. You will never have termite damage or use pesticides again. You will paint less often. HVAC units have a longer service life because it doesn't work as hard or often to maintain environmental settings. RASTRA provides the lowest cost-of-ownership available today.

The importance of creating a low Cost-of-Ownership 1 – 10 _____

Increased Resale Value

As people become more familiar with RASTRA and its many benefits, it's logical to believe that RASTRA properties will command a premium of 10-15%. This ability to differentiate will translate in to a favorable selling position.

According to a 2007 survey by the National Association of Homebuilders, home buyers said they would spend an additional \$8,964 on a home if it would reduce their energy bill.

The importance of increasing Resale Value 1 – 10 _____

Value Point Recap

1=no interest :: 5=moderate interest :: 10=important

The importance of lowering my Energy Bills _____

The importance of increasing the Strength of my home _____

The importance of increasing the overall Safety of my home _____

The importance of improving the Interior Comfort of my home _____

The importance of protecting my home from Fire _____

The importance of improving the Quietness of my home _____

The importance of using Environmentally Friendly building materials _____

The importance of improving my Indoor Air Quality _____

The importance of reducing Maintenance Expense _____

The importance of creating a low Cost-of-Ownership _____

The importance of increasing Resale Value _____

Total Value Points _____

Average Value Score (total÷11) _____

For more information please visit rastra.com