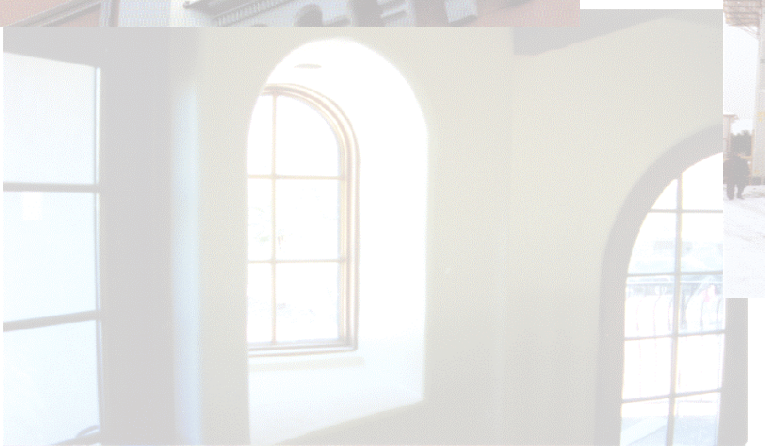
RASTRA®

THE ENVIRONMENTALLY FRIENDLY SOLUTION

PRODUCT INFORMATION



Our Mission Statement

We have a vision: A vision to preserve a world with forests, with clean air and clean water for future generations to come. A vision to take care of our environment and provide sustainable and energy efficient buildings, to meet new standards and to use recycled materials or those, which can be replenished. This is our mission and this is what RASTRA offers: A full range of building materials with a content of recycled materials exceeding 80% of their volume. Materials, which not only cost less to use and to maintain, but also protect against fires and rages of nature and will last for lifetimes.

Rastra Technologies, Inc.
7621 E. Gray Road, Ste. A1
Scottsdale, AZ 85260
877-935 3545
www.rastra.com
www.panelcrete.com

The RASTRA® Building System

is the ultimate answer for economical and environmentally effective construction. A concrete form system made of a lightweight composition with a higher than 80% content of recycled material. RASTRA® is the solution for this century to build environmentally conscious, energy efficient, and create a healthy living environment.

The development of the RASTRA® system goes back to 1968, and is based on extensive studies on building sites and existing methods. The objective was to design a system, which combines many of the advantages of contemporary systems but avoids the problems involved by using highly sophisticated methods. Simplicity, quality and affordable cost have been kept in mind.

Very soon one basic idea was born: a large block should be used to speed up construction, which however is light enough to be handled without heavy equipment.

Already in 1969 the inventors were using EPS-panels with cavities cut into them, which later had to be filled with concrete in order to obtain stability. But immediately all the disadvantages of using pure expanded polystyrene as a wall material made it clear that another material composition has to be found, which later has been named "THASTYRON" (A synonym for THermo-Accoustic-STYRo-cONcrete).

Two basic ideas are realized in the RASTRA® building system:

- It is a combination of both, a solid and a lightweight building material. For each purpose, the best-suited material has been chosen.

- Only two different elements are used to produce buildings of all design versions.

What does it mean "the proper material for each function"?

First there is THASTYRON - a lightweight, honeycomb-like mixture of small EPS-beads completely covered with a skin of cement. In other words, a modified EPS-concrete. EPS-concrete has been used before in other applications, but there was no real breakthrough until RASTRA® found the right combination of shape, density, and structural member. Although THASTYRON initially has been manufactured using virgin polystyrene, only recycled materials, such as packing materials, food containers etc. have been used since 1979.

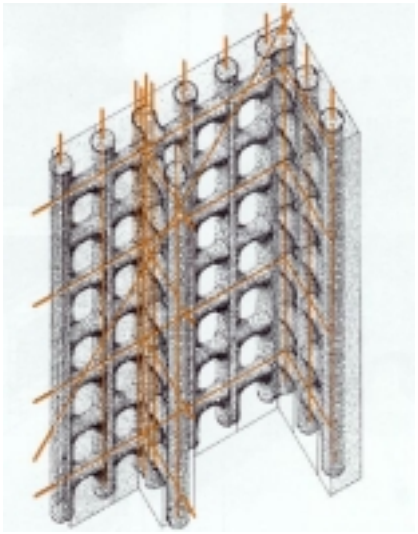
THASTYRON offers the best properties for a wall material; it has best heat/cold

insulation, is resistant against fire, frost and other climate influence and takes plaster, stucco or any other type of wall covering very well. RASTRA® is using a specifically designed, easy to handle element made of THASTYRON with an inside system of horizontal and vertical cavities.

As THASTYRON virtually is not a structural material, concrete or reinforced concrete is used as a second component being the load-bearing member. The cavities of the elements are filled with concrete after they have been set up on site, thus a rigid skeleton is formed inside. Due to the puzzled out system and form of the channels, highest strength is obtained using the lowest possible amount of concrete. By using different qualities of concrete and/or various amounts of reinforcement, in horizontal, vertical or even diagonal directions, the load capacity can be adapted to all building requirements. Because of the thermal insulation of the RASTRA® elements, concrete can be poured even at temperatures far below freezing point.

The lightweight building modules produced to make up the RASTRA® system are the primary construction elements for building of homes, apartments, blocks of flats and industrial buildings. For the manifold applications in construction only two types of building elements are used:

The standard element - used for walls - has semicircular grooves on both length sides interconnected by a number of tapered transverse channels. A typical standard element may be up to 3 m (10 feet) long, 40 cm (15 inches) wide and the wall thickness can be between 22 and 36 cm (8 to 14 inches). Such an element of 25cm (10 inch) thickness has a weight of approximately 75 kg (155 lbs), still light enough to be handled without a crane.



The end element - used for wall ends, lintels, corners, window recesses and even for ceilings - has half the width of the standard element and has no transverse openings. For corners, cutouts are made in order to obtain channels for the concrete to connect the two adjacent walls.

Building with RASTRA® is simple and can be learned easily even by unskilled laborers. Uncomplicated, specifically designed hand tools help to further facilitate the work.

Vertical loads of up to 100 tons per lineal m (80 kips./lin.ft.) of wall have been tested before failure occurred. This is accomplished to the fact that the slenderness of the columns is positively influenced by the horizontal connections and by embedment in THASTYRON, which acts as support. With optimum reinforcement load-bearing capacity in all directions can be increased to construct to a high degree earthquake safe. Dynamic shear tests to simulate earthquake loads have resulted in strengths

700% higher than traditionally used framed shear walls. This, although, only 70 to 80 liters of concrete per m^2 (0.26-0.31 cuft per sqft.) of wall are used.

The system has been approved in Europe for up to 6 stories with limited reinforcement in some of the cells or up to 9 stories with reinforced cavities.

Furthermore RASTRA® is fireproof; tests up to 5 hours (un-plastered 10" wall) have been performed. RASTRA® also provides sound attenuation of up to 53 dB (12" wall with plaster on both sides); more than sufficient even for separation walls between apartments.

Installation of the RASTRA® elements is very simple and does not need special skills or tools. The elements can be used horizontally or even a combination of horizontal and vertical assembly is possible. The system of cavities always fits, as the distance between the horizontal cores is equal to the width of the element. The elements are lined up and the wall is stressed together with rebars or

they are glued together with single component PU-foam. The elements can be easily cut to the proper dimension by means of a wide toothed handsaw or by using a chain saw. The wall is supported by adjustable wall support rods, which help to bring an entire wall segment into plumb. Thus an entire wall section can be adjusted.

By cutting the elements and using end elements for the jamb, window and door openings may be formed. Small windows can be simply cut out. Arches can be made without expensive formwork. The desired shape is simply pegged out with sheet metal or plywood in order to block off the concrete. After the concrete has become solid, the shape is cut out. The remaining pieces of the elements can even be used elsewhere!

Any kind of ceiling or roofing system can be used with RASTRA®. When using massive ceilings the top of the wall is cut out L-shaped along a level line. In this way no formwork for the tie-beam is necessary. A 5 to 8 cm (2-3 inch) thick flange of THASTYRON remains. Thus, cold bridges in this area are avoided. RASTRA® ceilings can be made out of end elements or special flooring elements. These units are light enough to be carried and laid without cranes. But also all other types of flooring systems will work with RASTRA®.

The concrete is filled floor by floor. Whenever a concrete ceiling is used it is cast with the walls. In most cases concrete pumps will be used for pouring the concrete. However, for a small building, a do-it-yourselfer may use a bucket to fill his walls.

A monolithic loadbearing structure is the result and due to the shape of the channels, concrete flows everywhere and fills the cavities completely.

There are actually no limits for realizing even fancy architectural designs. Curved walls, for example, can be made by beveling off one flank of the element to achieve a desired radius. There are no limits to the ways the elements can be cut. Partition walls can be connected everywhere by cutting connection channels in order to make the concrete flow into the adjacent wall section. Columns for excessive loads can be formed by using two elements, doubling the wall thickness and thus creating a 3-dimensional structure.

Not only the construction of the walls is simple and timesaving. The ducts for water and electricity are cut with

simple tools and the conduits for electric lines

are retained in the THASTYRON without any additional fastening. Plumbing of course also can be inserted into the cavities before pouring the concrete.

THASTYRON takes plaster very well and usually only single layer plastering can be used. Tiles are applied directly on the element's surface.

RASTRA® building elements can be used for many applications - in the same way for the do-it-yourself builder as for the industrial contractor. Free from any module RASTRA® can be designed to fit each architectural idea. And RASTRA® is used in various styles around the world. For private housing as well as multi family homes, hotel buildings, and social housing. Good applicability has been developed for industrial projects, where load-bearing and good insulation is of importance. Cold stores have been designed with walls consisting of face to face doubled RASTRA® elements to meet extreme insulation and highest load-bearing capacity at the same time. Also agricultural buildings - lit. stables have been constructed out of RASTRA® evidencing best breeding results.

Another method to install RASTRA® is the prefabricated wall segment. If a light crane is available on site a number of elements are glued together, either by means of a specially developed device in the plant, or manually on site. Prefab panels up to 8 m x 3,8 m (25 feet x 12 feet) have been used.

These panels may include window frames, reinforcement, part of the plumbing and electrical installation, etc. Even so, such a panel will not weigh more than around 2 tons, as the grouting is done on site once the panels are in place. That also means that no special trailers are used for transportation and 8 or more panels may be loaded on one trailer. The well-known problems that plague other prefab systems do not exist with the RASTRA® building system. There is no time needed for curing the panels as they are taken from storage. Therefore, orders can be dealt with swiftly. No jointing problems have to be solved - the cast in site concrete will do that. Adjustments are easily made by cutting the panels or adding elements. This innovation has cut construction times even further. Times of only 0,1 man-hours per 1 m^2 are common. Thus the already astonishingly short times of about 0,3 to 0,5 man-hours per 1 m^2 of wall using single RASTRA® elements have been improved for sites equipped with a light crane.

After the first houses were built in 1972 and monitored over a couple of years, it was found that the system worked very well and ever since has been very positively accepted. Licenses have been set up in countries in Europe, the Middle East, the Far East, North Africa and the Americas.

The RASTRA® system meanwhile has been granted some of the toughest government approvals for use in single and multi-story buildings, below and above grade. Among others it has been approved by the Institute of Building Technology Berlin in West Germany and has been approved by ICBO, SBCCI and Code 2000. Another interesting aspect is that 100% recycled polystyrene such as old packing, food containers, etc. can be used in production. Therefore, RASTRA® is an environmentally friendly system. This and other facts earned RASTRA® a number of awards throughout the world, such as:

Saudi Arabian Investment Fund, "Best presented Housing System"	1974
International Industrial Trade Fair, Moscow, "Best Exhibit"	1984
Austrian government, "Environmental Award"	1989
World Fair for Industrial Inventions, Bruxelles, "Gold Medal"	1988
Innovation Show, Frankfurt, "Certificate of Recognition"	1989
Competition for Social Housing Methods, Mexico, "Certificate of Recognition"	1993
Association of Professional Environmentalists, California, "Achievement Award"	1996
Material Connexion, New York, “Excellence in Material Development”	1999

The production of the RASTRA® elements is done in state of the art plants, offering all grades of automation - either hand operated or fully automatic with capacities of 100 to 700 m^2 per 8 hours shift.

Transport of RASTRA® elements is managed without pallets, the bottom element serves as a pallet and the forklift or crane will lift a pile by taking it up in the holes of the element. The full loading volume of a truck can be used (appr. 300 standard elements), as there is no limitation by weight.

The good workability of THASTYRON allows also using it for various form parts, such as facade elements or millwork to obtain stylish effects.

The advantages of the RASTRA® building system can be seen in the good properties of the finished buildings, as well as in the production process and installation on site; such as:

- high stability due to the monolithic concrete frame work, which when properly

reinforced can make buildings earth-quake safe and storm proof.

- or the excellent thermal insulation, which helps to cut energy costs - the insulation value of THASTYRON is 15 to 20 times better than concrete, up to k=0.24 W/m^2.K (R-value =23 hr.ft^2°F/BTU). Factoring in thermal mass effects, wall performance can be equivalent to a frame wall with R=49, depending on wall thickness and location.

- RASTRA® is absolute insensible to temperature, weather and radiation. THASTYRON is totally frost-proof and has the highest fire rating.

- The environmental factor of an ecological sound building material consuming recycled raw materials, taking them permanently out of the waste stream and providing a perfect healthy envelope.

- In production not only 85% of the raw material is post consumer material but also all cutoffs and chips created in production is immediately recycled and made into new elements. Curing is without external energy and only about 1 kWhr electricity is used to produce 1.2 m^2 (12.5 sqft) of wall.

Also RASTRA® offers high quality for low cost, high flexibility in planning with no extra expenses and can be handled without special skill, without expensive equipment, and construction time is cut remarkably.

- In production the advantage can be seen in the fact, that only two types of elements are on store and the elements are transported without pallets. Raw materials are available everywhere. Highly developed production machinery gives another guarantee for smooth operation and equal quality. All this is guarantee for a fast return on investment.

Looking back to more than 25 years of experience and performance we are able to guarantee an almost unlimited lifetime for RASTRA® structures and outstanding performance. But we also have experienced that RASTRA® was very well accepted by owners of the buildings, consultants, architects and investors in many countries. RASTRA® has proven itself in many applications as an outstanding system.

Evolution of the Logical

The dream of past generations remains what it always was; the dream of home ownership, of owning that special and comfortable place where friends are welcome and where rest and solitude are available at will.

The dream of generations to come will be to enjoy a world as it always was; the dream of a world with forests, with clean air, with clean water, a world in peace and harmony with nature.

To make these dreams come true we must take care of our environment today. We must demand that new homes and commercial buildings be sustainable, be energy efficient, meet new standards and consist of recycled materials or those which can be replenished.

When humans first built permanent structures they were built from local, renewable resources, like rocks, logs, and mud. As populations swelled, cheaper and more effective building systems were needed. Stud framing answered this need for some time. Nowadays this method does no longer meet all the requirements of the environment. During the last three decades a huge number of new building systems and materials have been introduced. Some have merely been refinements of existing ideas, while others have been new and even exotic. Some failed outright. Others were rejected because they were too expensive or too complicated to be used. Many of them were neither environmentally friendly nor energy efficient.

Insulated Concrete Forms (ICF's) are today's answer to a modern approach to construction. But other problems have shown up with pure foam ICF's.

Adhesion of plaster is sometimes inadequate, to protect against fires extra sheet rock has to be mounted inside the rooms, wall surfaces are too soft, the formation of mold is a serious problem causing health hazards.

RASTRA® has taken another approach. Three decades ago RASTRA® decided to abandon the idea of making a pure foam product and looked for other solutions. RASTRA® outperforms all other prefabricated concrete form solutions for resistance to weather, fire and any other environmental forces and is ready for the direct application of a variety of finishes the moment the wall is up.

Another thought: Is there any system out, which would enable you to create such shapes for practically no additional cost, other than RASTRA® and decorative products made out of Thastyron™?

The Panelcrete™ Façade System

The heart of the RASTRA® Exterior Finish System (EFS) is the innovative use of flat (or structured) boards made of a specifically designed polystyrene concrete, engineered into an assembly that creates a proprietary exterior wall system. A system to meet the demands of state of the art construction and to solve the problems associated with exterior wall construction, which have always plagued the industry (see 5.2 Competing Products).

Panelcrete™ has superior wind and fire resistance, offers the architect wide flexibility in design, can be shop fabricated or job applied to meet virtually any situation required,

is easily cut by hand or with power tools but is very puncture/vermin resistant and is the first exterior wall system to solve the drainage problem associated with virtually all other wall systems.

Panelcrete™'s polystyrene concrete substrate will not hold water. It will quickly and completely self drain. The EPS concrete for this application is formulated to provide a matrix, which allows water to drain completely. It has an insulation R-value of approximately 2 per inch of thickness. Since its principal application is over standard framed construction, R-values for walls in excess of 20 can be achieved by insulating the stud cavity of the wall assembly.

Practically any finish or cladding can be applied to the basic Panelcrete™. It can be made to look like pre-cast concrete, wood, brick, stone or stucco with a wide variety of finishes from which to choose. And since it is made from real concrete with polystyrene aggregate instead of stone, it is lightweight, not affected by water or frost-and-thaw cycles.

Panelcrete™ utilizes a waterproof membrane, which is directly applied to a cement based sheathing. Should the finish on the face of a panel become damaged or should a window or other opening leak, all water entering the polystyrene concrete substrate is quickly drained out of the face of the wall through a weep system built into this substrate. Thereby water is prevented from getting into the building. The

Panelcrete™ substrate has a porous structure making it an “open rain screen” and avoids buildup of any differential pressure in the wall system

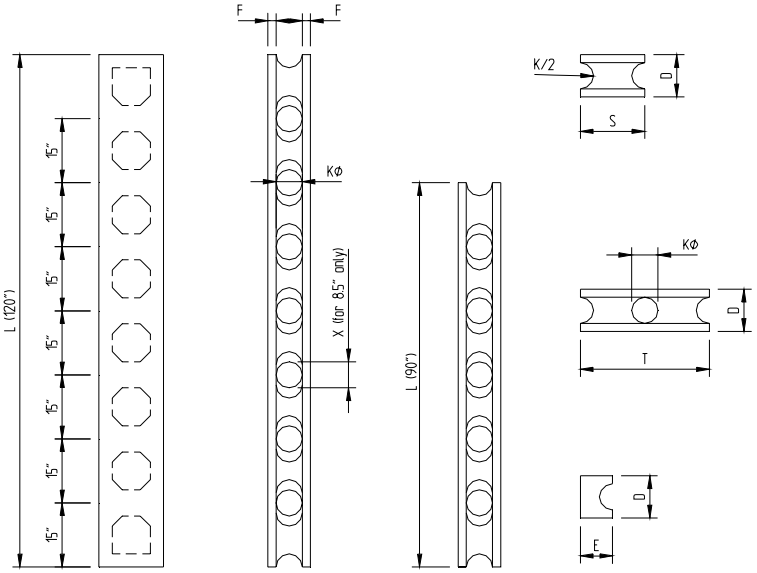
The RASTRA® Millwork and Decorative Products

There are unlimited applications for structured panels and millwork made of EPS concrete. The possibilities offered due to the outstanding workability of the raw material are limitless. The end result is a decorative product which is non combustible, frost resistant, does not shrink and expand, accepts all types of stucco very well, does not age, and is easy to use and install. All forms can be milled out of standard raw units, thus special orders can be dealt with swiftly. In most cases there are no or only minimal tooling costs.

Decorative units come in many forms: Either in structured panels to be mounted on frames, brick walls, concrete or other substructures, or as ornaments in straight or round ledgers or other form parts fitting the design.

This product has been used extensively for decoration of new classic and modern buildings but also for restoration of art work. Amazing results have been displayed in the restoration of crumbling and war damaged historic buildings in Berlin, Prague, Moscow, Budapest, London and elsewhere in Europe. With no other materials it would have been possible to accomplish these results and heed regulations with regard to fire and wind hazards – and longevity.

RASTRA® ELEMENT DIMENSIONS



DIMENSIONS - ins (mm)

D	K	F	L	S	T	E	X
8.5" (215)	5" (127)	1.75" (45)	90"(2286)	15"(380)	30"(760)	72"(190)	5.25"(135)
10" (250)	6" (152)	2" (50)	90"(2286)				N.A.
12" (305)	6" (152)	3" (76)	or				
14" (355)	6" (152)	4" (100)	120"(3050)				

VOLUMES and WEIGHTS

Thickness ins(cm)	Length ins(cm)	Standard Element cuft(dm³)			End Elem	Weight Std.E. ≤ lbs(kg)
		Outside	Cavity	Net	Net	
8.5"(21.5)	90"(228)	6.64 (188)	1.97 (56)	4.67 (132)	-	112 (51)
10"(25)	120"(305)	10.42 (294)	3.67 (104)	6.75 (190)	4.22 (119)	158 (72)
	90"(228)	7.81 (221)	2.73 (77)	5.08 (144)	3.17 (90)	120 (54)
12"(30.5)	120"(305)	12.5 (354)	3.67 (104)	8,83 (250)	5.26 (149)	197 (90)
	90"(228)	9.37 (265)	2.73 (77)	6.64 (188)	3.95 (112)	148 (68)
14"(35.5)	120"(305)	14.58 (412)	3.67 (104)	10.91 (308)	6.31 (178)	243 (110)
	90"(228)	10.94 (309)	2.73 (77)	8.21 (232)	4.73 (134)	183 (83)

FLAT PANELS

Thickness ins (mm)	Width ins (mm)	Length ins (mm)	Weight ≤ lbs (kg)
2" (50)	30" (760)	60" (1525)	50 (23)
4" (100)	30" (760)	120" (3050)	190 (86)

SELECTED SYSTEM DATA

PHYSICAL PROPERTIES

Parameter (report numbers)	**Rating/Value**	**Remarks**
Recycled Content	± 85% by volume	Mainly postconsumer expanded or extruded polystyrene.
Bulk density	22 lbs/ft^3 ± 10%	Elements for specific applications may be produced with higher density.
Compressive strength of THASTYRON	56 psi	Depending on density.
Tensile strength of THASTYRON	43 psi	Depending on density.
Water vapor transmission PI-4582/ws, 5/80	7.3	This is a (dimensionless) factor to measure possibility of condensation in the wall, particularly in cooler periods or with high air conditioning; the low value of Thastyron is a guarantee that no condensation will occur.
Fire endurance UL – R14366, 9/91, 2/99	4 hours rating (ASTM E119)	A 10" unplastered Rastra wall has been tested for 5 hours under a load of 10,000 lbs/lin.ft.; two tests have been performed with an additional positive and negative load perpendicular to the wall, simulating a 35 mph wind pressure; with a temperature in excess of 2000°F on the exposed side the surface temperature on the unexposed side of the wall did not increase for more than 7°F; a high pressure water stream directed towards the wall immediately after burning did not penetrate the wall.
Thermal barrier (Room fire test) OPL – 15715-1808, 9/97	no flame spread, no smoke development, wall meets UBC 26-3	A wood crib is burned in a corner built with unplastered Rastra walls exposing it to appr. 1700°F; flame spread, smoke and any damage of the wall is monitored.
Surface burning characteristic SGS – 113924. 9/98	Flame spread index 0 Smoke developmt. index 5 NFPA class A UBC class 1 ASTM E 84 (NFPA 255, UBC 8-1)	4" thick Thastyron panels were exposed to flame and spreading of the flame front and smoke density, compared to red oak was measured. The flame front was proceeding less than 0.5ft, which is within the flame spread of the burner. For smoke development light absorption is measured. The test showed some very low absorption, for the test result values are always rounded to the next figure divisible by 5.
Frost resistance TIB – KR/SI, 10/84	Highly frost resistant	Thastyron specimen have been soaked in boiling water and frozen at -4°F; after 50 cycles no reduction of compressive strength could be found.
Toxicity BI – 08-95-0338, 5/95	Low toxic	Testing conducted using Leaching Procedure by EPA SW-846 method 1311, metals by method 6010 & 7470, volatiles by method 8240; metals are less than 1/20 of regulatory limit, only traces of 4 volatiles out of 40 tested found.
Formation of mildew API – 17137, 4/83	Mildew , Black Mold & fungus growth is not anticipated	Test cubes were kept under moist conditions for 40 days after innoculation of test germs (aspergillus niger, rhizopus nigricans). No growth of cultures could be observed; formation of mycel or konidien culture did not take place.

Water transmission ATI – 03-30070.01, 12/98 ATI – 03-30305.01, 12/98	Meets requirements ASTM E331, ASTM E514, meets UBC 14-1 (grade "C" craft paper)	10" thick Rastra wall with skim coat has been exposed to a water spray with a flow rate of 5.0 USgal/ft^2.hr at a differential pressure to simulate a 125mph wind. (Extended time testing has been done by US Navy and met standards).
Average wall humidity MA-39 – f711/83, 10/83	Average 2.5% by volume	Samples have been taken from a home more than 5 years in use from areas where most humidity is expected.
Expansion TUG – 52.620/83, 7/83	0.0018inch/ft (as standard concrete)	Even as Rastra elements without concrete grout show shrinking and swelling in changing humidity, shrinkage is neglectible once the concrete is poured.
Thermal performance MPA – 970344-Hu, 1/98	Effective R-values 20 to 49 h.°F.sqft/Btu	European testing on a 1.5m by 1.5m, and US testing of 8'x8' walls revealed heat conductivities of 0.084 to 0.053 Btu/h.°F.ft of dry, grouted 10",12" and 14" walls. DBMS values between 1.79 and 2.17 have been established for 6 US climate zones. Energy usage shows even better efficiency.
Sound insulation BVFS – U3/19A/87, 2/87 MA-39 – F956/85, 6/85	>50dB(a)	Measurements have been taken in laboratories and in real buildings; dB is a value measured on a logarithmic scale, therefore, f.i. the difference between 27dB (an average value for a 2x4 framed wall) and a 50dB Rastra wall result in a 199 times lower sound intensity. The value indicated in test results is an average measure on a band width of 100 to 3150 Hz. Another aspect is sound absorption, which a Rastra wall provides.

STRUCTURAL PARAMETERS

Pillar strength TUG – 53.725/84, 3/84	> 70 kips/lin.ft (failure load)	Tested was a pillar consisting of 1 Rastra std. Element capped with 2 end elements; concrete strength 3000psi, no reinforcement
Cyclic shear UCI – RAL 20177-IP, 9/96	10ft x 10ft: ±68 kips 5ft x 10ft high: ±20 kips	Walls have been constructed with reinforcement on 15" centers not centered in the cavity. In order to simulate high wind or earthquake loads cyclic loading in plane and a constant axial load of 10000 plf has been applied. The wall showed extreme good ductility and a deflection of 1.14" re. 1.24". Failure occurred near the base connection to the foundation.
Narrow wall cyclic shear UCI – RAL-25683-NSW, 11/98	30" x 10ft high load at 60": 11kips load at 75": 10kips load at 90": 9kips	To investigate shear resistance on very short elements of a wall specimens consisting of only 1 std. and 2 end elements have been tested. Boundary reinforcement has been increased to avoid premature failure due to flexural forces. A constant axial load of 10000plf has been used. Shear load has been applied in 3 heights to gain information about pillars with different aspect ratios.

Slender wall UCI – RAL-23940-SW, 10/97	Axial load 1000plf, 7.5" out of center, width 45" (4 col.) Flexural load at failure: Wall 16ft high: 2800lbs Wall 20ft high: 2200lbs	The specimens were loaded with a constant out of center load to simulate roof loads introduced by ledgers. The out- of-plane load was applied on 1/3rd points on the side to increase the eccentricity of all loads. The walls were able to sustain the applied axial and out-of-plane loads through the deflection limits given in the codes and beyond.
Out of plane load UCI – RAL-20177-OP, 9/96	9ft span: 9kips	Load was applied in 1/3rd points on a 10" Rastra element laying flat. No brittle failure occurred even as the test was continued beyond 80% peak load. Deflections at peak load were 2.44".
Lintels & beams UCI – RAL-20177-L, 9/96	Height:1 element (2 pillars) 10ft span: 21kips 5ft span: 26kips	One Rastra element was used capped on the lower side with an end element to simulate a lintel design as it may be used in the field. Support was free at 10ft distance, loaded at 1/3rd points.

The outline of test results above are for rough reference only. For any application of these tests in structural calculation request the full text of these reports or ask for engineering information based on such testing.

VISIT US ON THE INTERNET

www.rastra.com
www.panelcrete.com

Licensed by Rastra America, Inc., 7621 E. Gray Road, Scottsdale, AZ 85260

ICBO ER 4203